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WHEN IN NEED, BUILD!

MEN, who know the conditions prevailing in industrial centers all over the country, will understand the need for additional housing to remove a menace to community health and establish a contented working class. Additional building is one of the prime requirements for conserving the human factor in industry and increasing health and efficiency. Cities which have prided themselves upon diminishing their slum areas are now deploring the sight of overcrowded tenements and insanitary dwellings.

The country is now apparently waking up to the fact that it will not serve the national interests to postpone necessary building, whether it be dwelling houses, hospitals, farm buildings, industrial and warehouse construction, or other work which serves a vital need to the community.

Hence it is evident that the slogan of "When In Need, Build," is likely to become popular, as the public become more fully aware of the true conditions.

The attitude of the Government, regarding unnecessary building operations, is set forth in a letter by Secretary McAdoo, on March 15th, to Samuel Gompers. He wrote:—

"I have been reported in the public press as having 'appealed to property owners not to construct any homes or buildings during the war.' This is entirely erroneous. I have said that building operations, which are not required to protect the health or provide for the comfortable needs of our people, or to supply facilities necessary for the proper conduct of business essential to the successful prosecution of the war, should be postponed."

There is no doubt that the curtailment of essential building is not a saving but an expense during the war, because through lack of normal facilities, the cost of everything is increased, since buildings are primarily necessary for the production of all other tools of industry as well as for the production of the necessities of life, food, clothing and shelter.

The building industries in general are desirous of maintaining a healthy degree of essential activity, and in view of this desire, a nation-wide conference is being arranged, under resolutions of the National Association of Builders' Exchanges, the National Builders' Supply Association, and the American Institute of Architects. An effort will be made to readjust the building industry as far as possible to meet the crisis, and to render its united resources most readily available for governmental needs.

Relative to McAdoo's communication to Mr. Gompers, it has been urged by men in the building trades, that a constructive rather than a negative interpretation should be placed upon it.

Commenting upon this letter, F. T. Miller, president of the F. W. Dodge Co., of New York City, speaking for construction interests, says:

"Rather than taking a negative attitude, the building industry might place a positive and constructive interpretation upon this letter; then every patriotic man engaged in the building line should engage in building operations primarily required to 'protect the health and provide for the comfortable needs of our people,' and in building operations required to facilitate our wealth-producing enterprises; for the making of money is necessary for the successful financing of the war, and money must be made through successful business enterprises. Setting up national welfare as the final test, and from both President Wilson and Secretary McAdoo's views, it is evident that a constructive national spirit which fosters creative enterprise is essential in order to insure a difference between what is made and what is spent."

GARAGE VENTILATION

How to Effectively Ventilate Garages and Prevent Asphyxiation of the Men

By John H. Perry

IN view of the facts that the atmosphere of a garage is frequently vitiated by dangerous fumes from various sources, garage owners are looking for satisfactory means of ventilating their garages.

There have been several cases where men have been overcome by noxious vapors and gases in garages, some even losing their lives.

The actual number of deaths really traceable to garage gases may be small, when compared with the large number of men engaged in the automobile industry, and perhaps no great fear of immediate danger is felt. But is there not an insidious hidden enemy lurking in the garage atmosphere all the time?

Go into an ordinary large public garage when the men

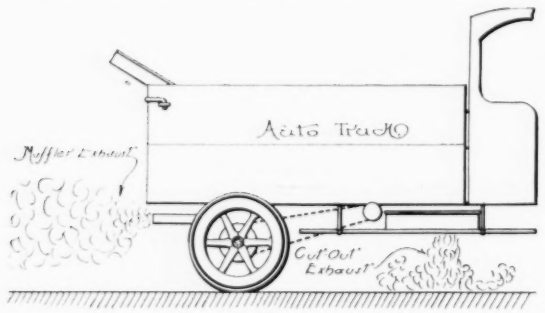


Fig. 1.

are running one or more of the engines to see how they work, and note the condition of the atmosphere.

You will probably observe a bluish haze enveloping everything. The visibility of the haze denotes that smoke is present to a certain extent. As far as health is concerned, the haze is not necessarily very dangerous in itself, as the smoke is composed of minute particles of carbon—the same as exists in the smoky atmosphere of a soft-coal burning community, or in an engine roundhouse.

But mixed up in that hazy atmosphere and unseen, and untraceable by smell, may be a most dangerous gas, which poisons and kills human beings. Its name is carbonic oxide, and it is feared by everybody who realizes its destructive power.

Carbonic oxide, or carbon monoxide, as it is frequently called, is known to chemists by the plain symbol CO. This symbol means that one atom of carbon has combined with it one atom of oxygen, and in this combination forms carbon monoxide gas.

This gas is a product of incomplete combustion of a hydro-carbon fuel—such as coal—or oil. In garages it happens to be a product of incomplete combustion of oil in the engine cylinders.

In addition to this CO, of course, there is the usual CO_2 product, which is the result of a complete combustion of fuel. So it really is a fact that these impurities are injected into garage air when auto engines are being run in a garage. But these impurities in themselves may not instantly overcome human beings. They really of themselves operate on the human system to poison and devitalize it.

Breathing these impurities for a long time, as garage men do who are employed in garages, must poison the blood and debilitate the bodies of these men.

I do not wish to enter into a discussion on the chemical or biological effect of CO and CO_2 on the human system, as I am not educated on that subject, but I do believe that these gases are not so stringent as to actually kill a man at once like the gases the belligerents shoot at each other over No. Man's Land. I believe that the military gases paralyze the breathing organs or heart or otherwise operate to destroy life.

In garage gases, however, I believe that the few deaths, which have promptly occurred, and been traced directly to auto gas was due to the presence of carbon monoxide and a lack of oxygen in the air.

Let us figure a little. One pound of carbon requires 150 cu. ft. of air for perfect combustion. Hydrogen requires a little more. Call it 200 cu. ft of air for one pound of oil. Suppose there are 7.5 pounds to the gallon, then a gallon of oil will use all the oxygen in 1500 cu. ft. of air, or 10 per cent. of all the oxygen in 15,000 cu. ft. of air, or 1 per cent. of all the oxygen in 150,000 cu. ft. of air.

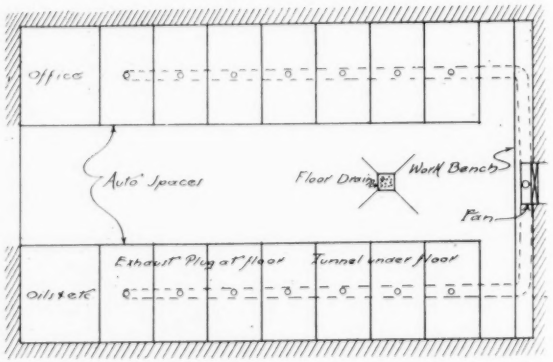


Fig. 2.

A garage 10 ft. x 10 ft. x 10 ft. contains only 1,000 cu. ft. of air. If this garage is not ventilated and is made of impervious material, and the engine is run say 15 minutes and in that time consumes 2 pounds of oil, it has used up all the oxygen in 400 cu. ft. of air, or 40 per cent. of all the oxygen in the garage.

This is about equal to air which has been breathed twice without being replenished with more oxygen, and certainly is liable to overcome any person quickly.

Consider the effect of "black damp" in a mine or quarry hole after an explosion. Men have gone into a black damp atmosphere unknowingly and just dropped down and died for want of oxygen.

Black damp is CO_2, which is heavier than air and lies on the floor like water. Mix some oxygen with black damp and a miner can work nicely in it. It is the lack of oxygen in the black damp which instantly suffocates the unfortunate individual who gets into it. If black damp was simply odorless poisonous gas, it would kill miners whether oxygen is mixed with it or not. But it seems that being practically pure CO_2 it will not kill them, if oxygen in sufficient quantity is mixed with it.

In garage gases probably the fatalities are due to poisonous gases as well as to a deficiency of oxygen. This, at least, is a safe and sensible way for heating and ventilating engineers to view the situation.

With this point of view in mind, let us look into the practical part of the problem. Consider an auto standing in a garage with the engine running for some purpose or another. Gasoline, which is a hydro-carbon fluid, is injected into the engine cylinders, either in the form of a gas or fine spray. On its passage it is mixed with a certain quantity of air, which forms an explosive mixture of gas and air. This mixture is exploded inside the engine cylinders by an ingenious arrangement of electric sparks. The explosions create great internal pressures, which drive the pistons forward and cause them to transmit the force of the explosions to the driving mechanism of the car, or simply to turn the engine, if the car is standing in the garage.

At each stroke the spent gases are blown out of the cylinders and into the atmosphere of the garage.

If the air supply is adjusted perfectly for the amount of gasoline used, then the combustion of the gas is complete, and the spent gas exhausted from the engine should not be seriously dangerous, providing a sufficient supply of oxygen exists in the garage atmosphere. If, however, the air in the garage becomes depleted of oxygen, or should the air supply to engine be too small, then the dangerous and poisonous gas CO. is exhausted from the engine and will affect anybody, who breathes it.

The exhaust usually blows out at the rear of an auto, if

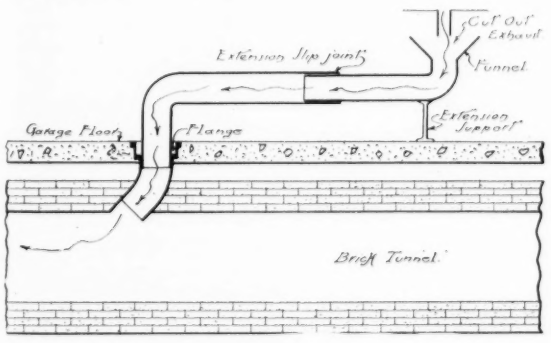


Fig. 3.

it is allowed to blow through what is known as the muffler, which is a tank to deaden the exhaust noise.

But if muffler is cut out, the exhaust may blow downward toward the floor. This means that, in a general way, there are two exits for the exhaust gases from auto engines, as shown in Fig. 1, and these must be considered by engineers in designing a ventilating system for a garage. It is evident therefore that the problem of ventilation is just a practical removal of these gases from the garage, and a supply of fresh air to replace the gases or foul air ejected from the garage.

There are two general schemes which are applicable to this work. One is to allow the gases to exhaust into the garage atmosphere and generously ventilate the garage as a whole; the other is to install a system of piping having numerous capped inlets at garage floors or walls, and one or more outlets to the outer atmosphere.

In the first scheme a large volume of air must be drawn

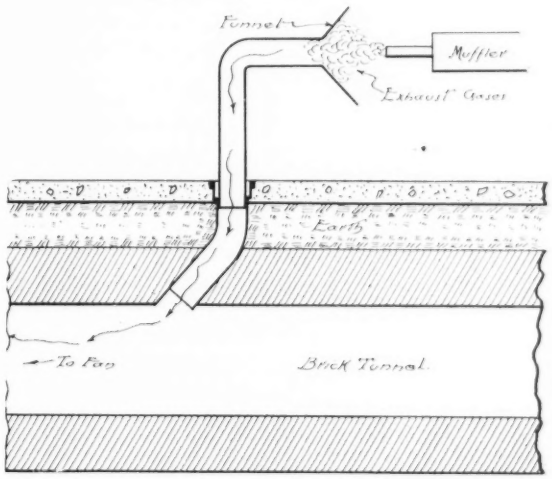


Fig. 4.

from garage by a fan or other means, and discharged to outer air. A large volume of air must be handled in order to dilute the gaseous impurities in a garage to a permissible degree, but in this system there will always be some gas in the garage.

The perfect plan therefore seems to be the latter, in which the gases can be piped directly into the exhaust piping installation, and be discharged to outer air without in any way mixing with or vitiating the garage atmosphere.

"But," you say, "garage owners will not go to the expense of installing such a system of exhaust piping." How do you know? Have you tried them? Did you ever talk the matter over with the architect and ask him to leave flues in walls or floors for such a system? Did you ever talk it over with a garage owner and see if such a scheme is practical from the garage man's standpoint? That really is the first step. If garage men cannot, or will not, take time to use such a system, then of course it is impractical.

This is about the way such a system might be installed. A tunnel may be run, say, along the center of the spaces where autos stand, but under the floor, and branches may be run from that tunnel to a capped outlet at floor level under each car, substantially as shown in Fig. 2.

Each car has its own floor plug under it. These are all kept closed except when used to draw the exhaust fumes out. One or more short portable pipe connections may hang on the walls ready for use anywhere. They can be used to connect up the engine exhaust outlets to the floor drains or flues where needed. Perhaps something similar to Fig. 3 might be useful.

This shows an adjustable extension funnel mouthed, connecting tube slipped into a 4-inch, 45-degree soil pipe bend, bedded flush with concrete floor. The funnel mouth of portable pipe is supported directly under the cut-out exhaust opening. The ventilating fan, shown in Fig. 2, is started. Air is then sucked in through the funnel. The auto engine

is started up, and the fumes are drawn directly into the ventilating tunnel and are discharged out-doors by the fan. The fumes then do not mix with air of garage and poison it.

This system draws a minimum volume of warm air from garage but a maximum density of the poisonous gases, which is the correct principle.

Should it be desired to exhaust the engine gases through

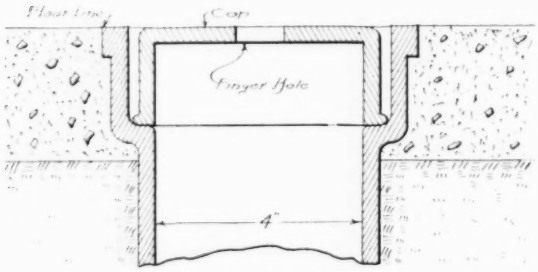


Fig. 5.

the muffler, then the funnel may be attached something like Fig. 4.

Any form of adjustable, portable funnel connection will do perfectly well.

The amount of work required of the garage man in making this temporary connection and starting up ventilating fan should be very small, and it would appear that garage men, who value their health, would be delighted to do it.

This arrangement, or something similar, should positively, efficiently, and very economically remove all poisonous engine gases from a large garage, and I think is worthy of consideration by heating engineers, architects and garage owners.

The size of the floor outlets may be 4, 5 or 6-inch. Possibly 4-inch will be satisfactory, if a powerful fan is used.

The size of the duct running under the floor need not be large. Possibly a 16-inch by 16-inch, inside measure, duct would be satisfactory for say 10 to 20 cars. This should allow 5 or 6 engines to be exhausting into the duct at the same time without affecting each other.

Of course, when outlets are not in use, they would be closed with a plain wood or metal cap, say like Fig. 5. A 1-inch finger hole is cast in center of cap for convenience in lifting it out.

It is only large garages, which contain a considerable number of cars, that require ducts and ventilating fans. A small garage, containing one or two cars, can usually be easily equipped with an outlet through wall at rear of each car. In such a case the portable exhaust connection may be hooked up, as indicated in Fig. 6. When not in use, the pipe A, which is a fixture in the rear wall, may be capped.

In Fig. 6 the dotted lines show how the funnel may be rigged up with two 45-degree elbows to take the muffler exhaust.

We will now say a few words regarding the general ventilation of a garage. This may be done in a manner similar to that usually employed in ventilating factories, foundries, etc. A fan draws in fresh air from out-doors, passes it over steam heated coils, blows it into garage at different points, and pushes the foul air out of garage by means of suitable vent flues, the same as factory work.

Of course, the vent flues should draw from floor during winter, and from ceiling during summer. This is to economize fuel during winter and let out the great heat of summer, which would otherwise accumulate at ceiling and make the garage unbearably hot.

Before closing it might be well to consider the matter of removal of vapors from spilled gasoline. It is well known that gasoline vaporizes readily, when spilled on the floor, and that the vapor is not only poisonous to a certain extent but also is explosive. The general ventilation of the garage takes care of this. Indeed, if the floor caps shown in Fig. 2 are all opened up and the fan is started, they should very efficiently draw off the gasoline vapors from the floor. Where continuous general ventilation is desired, it may be very well accomplished by having all the caps off all the time, and inserting the portable gas connection under cars to carry off fumes from engines when required.

But when it is desired to run the system with all floor outlets open, the duct must be large. It should be equal in area to the sum of the areas of the floor outlets, or larger, and the fan must have ample power.

There is, however, another source of gas trouble, which should always be attended to in garage drainage. It is the elimination of gasoline oil from the floor washings.

Gasoline liquid must never be allowed to flow into sewers. Neither should gasoline vapors be allowed to enter sewers.

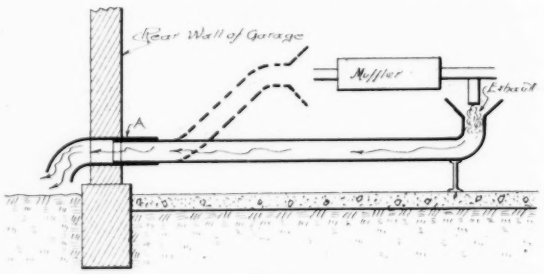


Fig. 6.

They must be separated from the garage sewage, and treated in a safe and suitable manner. But space will not allow us to consider that matter here at present. We are planning, nevertheless, to treat this important subject in another article.

SHOULD INTELLIGENCE AND EDUCATION BE TAXED?

Do you wish to put a tariff on intelligence?

Do you want to levy a tax on education?

At the last session Congress passed a law which establishes a postal "zone" system for magazines and periodicals. It passed a law increasing the postage on periodicals to you, the readers of this publication, from 50 to 900 per cent. And it did it by re-establishing a postage "zone" system that was abolished by President Lincoln in 1863. Instead of a flat rate, made as cheap as possible in order that there could be a chance for the intelligent consideration of public questions to reach the farthest limits of the country and the most remote habitation on an equal basis, the trade papers and the magazines containing all this discussion and all the best information and fiction and all the best art must hereafter pay an excess rate like so much fish or canned lobster or fabricated steel.

You are going to buy your education by the pound-mile now. It isn't a free flowing stream from which all may drink. It has been dammed and its flow checked. Congress did it. If it would bring any increase to the revenues of the country that would amount to anything, it would never be opposed. But it won't. It will drive magazines out of business.

We call your attention to it because we don't believe you know it. And we don't believe you'll stand for it.

Write to your Congressman about it. And demand the repeal of this particular passage.

RELATION *of* HOT WATER SERVICE HEATING *to* VARIOUS TYPES *of* BUILDINGS

Notes on How to Determine the Quantity of Hot Water Needed in Buildings of Various Kinds

By Harold L. Alt*

THE question of proportioning hot water supply is one upon which a great deal has been said and published, yet when a final decision is made it is more a matter of common sense and judgment than of any deep engineering calculation. Undoubtedly the reason why more authentic data are not on record in the Society's publications relating to this, is because the hot water tank comes pretty close to the jurisdiction of the sanitary engineer—whose fixtures are supplied therefrom—and who should furnish the heating engineer with the maximum number of gallons of hot water required per hour and the temperature rise expected. From this the heating engineer could readily calculate the pounds of steam condensed per hour or the pounds of coal to be burned.

For those who desire to make their own estimates, however, or who wish to check the designs of others, the following data may prove a help as a basis on which to compute within a fairly close approximation.

The consumption of hot water in a building may be most accurately determined from a knowledge of the number of occupants, length of occupancy and use of building. A building occupied 24 hours per day and in which laundry and culinary operations are carried on will probably run about 25 gal. per day per person. Without laundry work, this would drop to about 15 gal., without cooking to about 10 gal., without bathing (showers, baths, etc.) to about 5 gal., or even less.

Owing to the number of occupants being often an unknown quantity, it has become quite customary to estimate hot water consumption entirely on the basis of the number of fixtures installed and, as, these fixtures vary in amount of use received, their actual consumption will vary also. From this has developed the scheme of figuring the maximum consumption possible and taking a percentage of water as based on the percentage of maximum use likely to be encountered in the building in question. Under such a method the following is used as the maximum consumption:

Fixture	Gallons of Hot Water Each Use		No. of Usings per Hour		Maximum Gallons per Hour
Lavatories	1	×	20	=	20
Baths	20	×	2	=	40
Showers	30	×	5	=	150
Slop Sink	10	×	2	=	20

Under ordinary conditions on a large building the *operating* maximum use will seldom exceed 33⅓ per cent of the *possible* maximum, so that for 50 lavatories the consumption will be as follows:

50×1×20×33⅓ per cent=330 gal. per hour.

For 10 showers, the consumption will be:

10×30×5×33⅓ per cent=500 gal. per hour.

The figures can be applied to any building with proper judgment; of course, in a school where a whole class comes in and takes a shower after gymnasium practice, the showers must be figured at 100 per cent, and the same for wash bowls in a shop where every one washes up in 15 to 30 minutes at quitting time. The percentages for the general classes of buildings are as follows:

For hospitals' use	33⅓ per cent
For office buildings	20 per cent
For shops	100 per cent
For schools (except showers)	33⅓ per cent

In a recent shop installation involving over 30 wash rooms the hot water was figured as follows:

¼ gallon per employe for use in washing.
¼ gallon per employe to remain in tank.
¼ gallon per employe allowed for tank, pipe, and bowl losses.

1 gallon per employe total.

This 1 gallon per employe was stored in a storage tank and the tank was given three hours in which to heat. Thus for 300 men, a 300 gal. tank is used and sufficient heating surface put in to heat $\frac{300}{3}$ or 100 gal. per hour from 50 to 150 deg. Fahr. This resulted in small coils, large tanks and a small heating load.

For apartment houses, by the fixture, the maximum amounts are as follows:

Lavatories	2 gal. per hour
Baths	25 gal. per hour
Slop sinks	15 gal. per hour
Showers	30 gal. per hour
Wash trays	10 gal. per hour

The maximum reduces to about one-half to one-third in actual practice, giving 25 to 30 gal. per hour per family.

The proportion of storage to heating capacity may be varied; where the hot water is used practically continuously throughout a period of hours a large storage tank is useless. As a general rule it may be said that the heating capacity should equal the constant load, and the storage capacity should be sufficient to carry over the peak, plus 25 per cent

*Paper presented and read before the twenty-fourth annual meeting of the American Society of Heating and Ventilating Engineers, in New York City, January, 1918.

to be retained in the tank. Thus for average conditions, if 300 gal. per hour is the maximum possible to use in the fixtures, one-third of 100 gal. would be average use and would therefore be the heating capacity, and one-third or another 100 gal. should be allowed for a temporary peak load. Then retaining 25 per cent in the tank, there is 100 gal. heated per hour plus (100—25) 75 gal. available from storage, or a maximum of 175 gal. for an hour of peak load. 175/300=58 per cent maximum operating load which is amply safe for any ordinary installation.

Where a hot water load is constant practically throughout the day, a very small storage capacity is required, but a heating capacity in safe excess of the assumed constant load should be used. Thus a bath house where the showers might operate at a maximum for several successive hours, would require a large heating capacity, but storage would be practically useless.

Another thing sometimes forgotten in determining the hot water tank size is the matter of circulation. In large buildings the circulation loss may run up nearly as high as the hot water consumption depending on the piping system. No storage tank will help this as it is a *constant* demand and must be supplied by an increase of heating capacity.

Thus if a building required a theoretical maximum of 1,000 gal. per hour, the total outside surface of the hot water mains should be computed, the loss (at 2 B. t. u. per degree difference in temperature between the water and the surrounding air) 40 per cent of this being taken (to allow for a covering efficiency of 60 per cent) and this divided by 1,000 B. t. u. to reduce it to equivalent gallons of heating capacity, since 1 gallon raised 50 to 180 deg. =

$1\times8\frac{1}{3}\times130=1{,}083$ B. t. u., or approximately 1,000.

Supposing this loss to equal 250,000 B. t. u., then $\frac{250{,}000}{1{,}000}=$ 250 equivalent gallons. So for 1,000 gal. thoeretical maximum the storage should be one-third of 1,000=333 gal., the heating capacity should be one-third of 1,000+250=583 gal. per hour.

It is almost always advisable to use a standard stock heater, where moderate price and quick delivery is desired. Most multi-tube heaters have a much larger heating capacity than they have storage. One manufacturer's sizes are as follows:

Storage Capacity	Heating Capacity	Sq. Ft. of Brass Coil	Steam Conn., Inch
25	100	6½	1
50	200	13	1
75	300	19½	1½
100	400	26	1½
125	500	33	2
150	600	40	2
190	750	49	2½
250	1000	67	2½
375	1500	100	2½
425	1750	117	3
500	2000	133	3
640	2500	167	3
700	3000	200	4
860	4000	286	4
1150	5000	333	5
1500	7500	500	6

So for this service in question involving a storage of 333 and a heating of 583 (or a total of 916 gal. per hour), the 190 storage heater with 750 heating capacity would be the nearest stock size, the total capacity of this heater being 190+750=940 gal. per hour.

For kitchen and laundry use, separate heaters operated at higher water temperatures are desirable. Although 180 deg. water has been mentioned in the preceding discussion, it is probable that a thermostat would be used on the tank to keep the temperature down to 120 to 150 deg. Culinary and laundry work, however, demand high temperatures and 180 deg. is the figure usually contemplated.

A kitchen, pot, vegetable or other culinary sink when in active use, can easily consume 60 gal. of water per hour, but their use would hardly ever extend over two hours. A laundry requires about 1 gal. per hour for each piece handled per day.

Thus a heater to supply 3 culinary sinks and a laundry turning out 500 pieces per day would be computed as follows:

3 sinks at 60 gal.=180 gal. per hour, or 360 gal. for 2 hours with 4 hours to heat, or:

360 storage and 360/4=90 heating capacity.

In the laundry, 500×1=500 gal. per hour. If this is drawn off at 30 minute intervals the storage should be 500/2+250/4 =250+62=310 gal. (250/4 being the 25 per cent to be retained in the tank.)

If the laundry used this water at 15 minute intervals then the storage capacity would be as follows:

500/4+25 per cent of 125=125+31=156 gallons. In both cases the heating capacity would be 500 gal. per hour.

Should the kitchen and laundry heaters be combined into one (at 30 minute intervals for the laundry) the capacity should be as follows:

	Storage Capacity		Heating Capacity	
Kitchen	360		90	
Laundry	310		500	
	670	+	590	= 1260 total hourly capacity
Nearest standard heater	= 250	+	1000	= 1250 total hourly capacity.

This is a case where a standard heater will not do, as it can be seen, if the laundry draws off 250 gal. at the end of a 30 minute period, the tank would be exhausted and the last of the water would be cold. Therefore a heater of about 600 storage and 600 heating capacity would be the proper combination to use.

In Fig. 1 is shown a graphic representation of the tank just calculated. The line representing the gallons used for the sinks is plotted at the lower portion of the drawing, while the heating capacity per hour allowed is plotted directly above. Running diagonally across the diagram, almost from corner to corner, is the line representing the quantities of water used in the laundry, and directly above this the line indicating the quantity estimated to be heated for laundry uses. Still above this are two lighter lines showing the sum of the other two for water used and water heated.

The uppermost diagonal shows the heating capacity of the nearest stock size heater—which, however, is deficient in storage and therefore not usable in this particular case. Close inspection of the diagram will show that while the heating of the water goes forward in a constant progression the utilization of the water is liable to be intermittent or a progressive use at intermittent intervals. Therefore, the water to be stored in the tank may be found by the difference between the water heated and the water used, this difference being cross hatched in Fig. 1, and the quantity so stored at any particular time is read over the proper hour or fraction thereof as noted along the bottom.

According to Fig. 1, the greatest storage capacity required for the sinks is at the end of the fourth hour and immediately prior to the beginning of their use. This is indicated by the height W or 360 gal.; at the same time, owing to the water used for the sinks being gradually drawn off from the end of the fourth to the end of the sixth hour, no 25 per cent additional to be retained in the tank is necessary owing to the "water used" never approaching the "water heated" within the 25 per cent limit of 360/4 or 90 gal. Its

closest approach is at the end of the sixth hour, when the water heated is 540 gal. and the water used is 360 gal., showing a quantity of 150 gal. still stored or amply safe.

With the laundry the same is not the case; it can easily be seen that the laundry requires the storage of 250 gal. for its use at the end of each half hour, and that this will be entirely drawn out at such a period. Therefore, if the sink storage required is greatest at the end of the fourth hour, the laundry storage required at the same time is indicated by Y or 250 gal. and with a 25 per cent reserve (X) or 60 gal. more.

Over at the extreme right hand side of the diagram, is erected a short perpendicular representing the combined storage capacity required this being, of course, the sum of $W+X+Y$ or 670 gal. On the left of this perpendicular and adjacent to it is erected a second perpendicular showing graphically the rate of heating required per hour, for which the water heated at the end of the first hour for the sinks (A) is added to the water similarly heated for the laundry (B) making a total combined heating capacity of 590 gal. per hour from which was plotted the diagonal for total heating capacity for all hours.

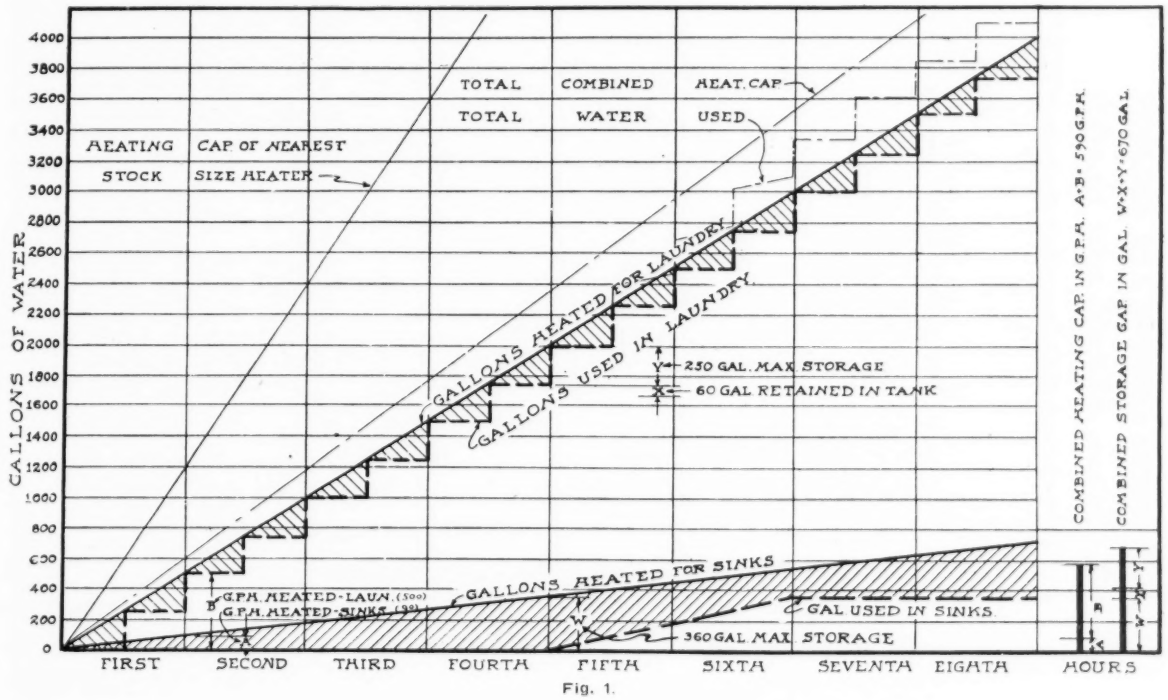


Fig. 1.

A comparison of the line of *total water used* and the line of *total combined heating capacity* shows that the nearest approach is at the end of the sixth hour, when the water used is 3,360 gal. and the water heated, 3,540 gal., leaving 180 retained in the tank against an allowable minimum of 25 per cent, or 167 gal., which is just about correct.

As far as the heating capacity of a stock heater is concerned it is more than ample as shown, but since the minimum storage capacity is about 670, it is not practical to use a heater with a storage of only 250 gal.

It is a peculiarity of hot water heating that when a steam heater is designed, it is customary to make it most safely ample. One prominent engineer computes the amount of surface required to actually do the work and then doubles it to allow for air binding, poor circulation, scale, etc. This is undoubtedly a very generous treatment but in these days of high prices on copper and brass, the good engineer puts in enough, but the best engineer put in *only* enough and does not supply a lot of surface to lie useless in the heater.

The heating surface should consist of copper tubing, or at least brass, and the number of square feet shown in the preceding schedule may be safely adopted as the results of practical experiments. The surface is not so high as to be extravagant yet it is high enough to accommodate a reasonable margin of safety. The ratio of heating surface per gallon is about 0.065 sq. ft. and while some authorities recommend as low as 0.04, it is doubtful if this will do the work for any length of time with bad water.

For instantaneous heaters the rapid movement of the water against the tubes as it flows along serves to increase the efficiency per square foot so that a reduction of the ratio per gallon of 0.044 sq. ft. is safe. It must be kept in mind, however, that the capacity of the instantaneous heater can not be exceeded for any length of time without resulting in cold water being drawn through the heater.

It can be readily seen that while a given group of fixtures might require hot water at a ratio of a certain number of gallons per hour, the rate for one period of ten minutes might exceed this average rate and in fact *would have* to exceed it if the next period of ten minutes fell below the hourly average. In the storage type of heater the stored hot water will carry over any peak load of this character, but in the instantaneous heater no such reserve is available.

Since the average use is about midway between the maximum and zero, to determine the maximum peak all that is necessary to be done is to double the average load. In other words the hourly heating rating of an instantaneous heater should be double that of a storage heater to serve the same fixtures or should be equal to the combined heating and storage capacity of a storage tank for the same service.

With gas heaters similar rules prevail, except that most

(Continued on Page 154.)

QUESTIONS & ANSWERS

WHY WATER LEAVES BOILER IN STEAM HEATING SYSTEM.

Editor "Domestic Engineering":—May I take the liberty of showing you herewith a sectional view of a moving picture theater and its steam heating system as installed? This system has a total of 675 sq. ft. of wall radiation.

As soon as pressure is started on boiler, water begins to leave it.

Will you kindly tell me how this trouble can be remedied?

Philadelphia. M. C. J.

There are several reasons why the water will leave a steam boiler as soon as a pressure of steam is developed. In the case, reported by correspondent, we believe that this condition is due to faulty piping, as there are several connections on the system, which should have been made in a different manner from that indicated on the sketch submitted. This sketch we show as Fig. 1, and from it we are unable to determine just how far certain sections of the return are above the water line of the boiler. The traps shown in the return are (according to the sketch) filled with water, and if the point, we have marked A, is the high point of the return, the drips from the two risers and radiators nearest the screen, or the front of the theater, are connected into a wet return, which method is right.

At points marked B and C the drips are connected into a dry return without trapping or checking the connections, and this method is wrong. Each of these connections allow the steam to short circuit into the return and hold back the water of condensation, and they should therefore be trapped or checked. We show by Fig. 2 a small section of the piping at this point and have indicated a method of using a light weight swing check valve in each connection.

Fig. 3 shows correspondent's sketch of boiler and connections. Two 3½-inch outlets of the boiler appear by the sketch to be connected directly to the 4-inch main. We recommend that the risers out of the boiler be connected into a 4-inch header and that swing joints be used in making the connections; also that an equalizing pipe be provided, which should connect the rear end of the steam header with the return of the boiler. For this job the equalizing pipe should be 2½-inch or 3-inch in size.

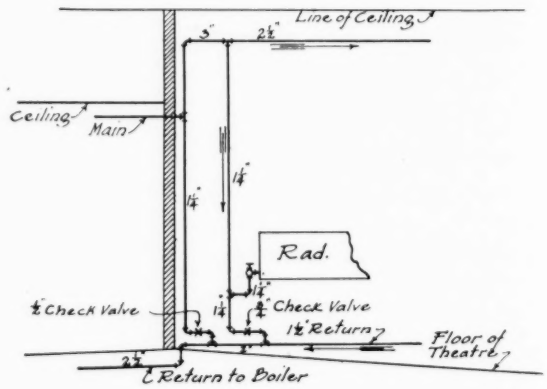


Fig. 2.

On the sketch, Fig. 1, there is shown a 1¼-inch branch serving a radiator in the entrance or lobby. This branch should not be connected in the manner indicated. A 4-inch x 1¼-inch tee should be placed in the horizontal leg

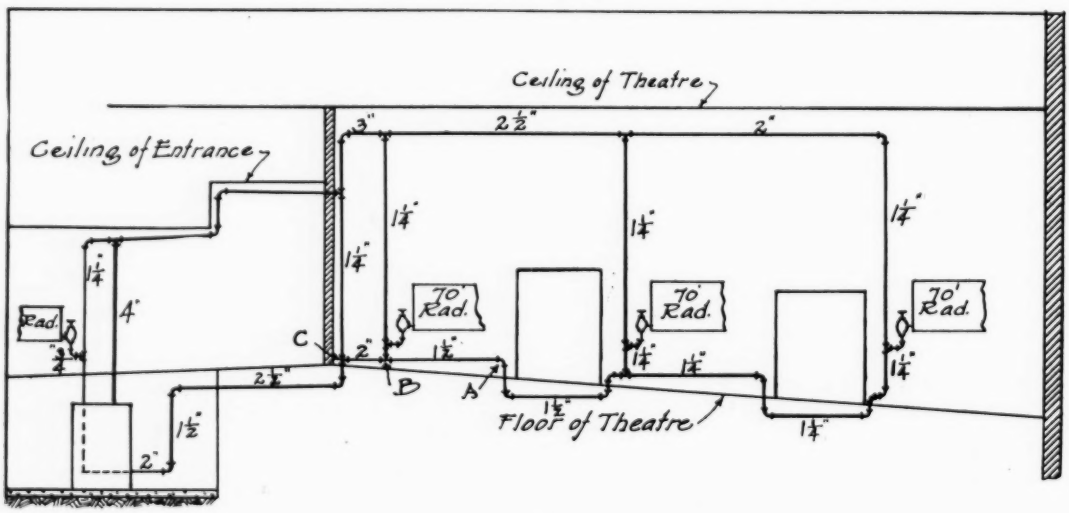


Fig. 1.

of the main a short distance from the riser, and the branch should be connected from this tee.

The liberal use of automatic air valves at points on the piping where the air can be quickly expelled from the system, such as the point, where a drop is made with the return in the boiler room and at the end of the overhead main, will stop any possible chance of siphonage.

If there are no other reasons for the water leaving

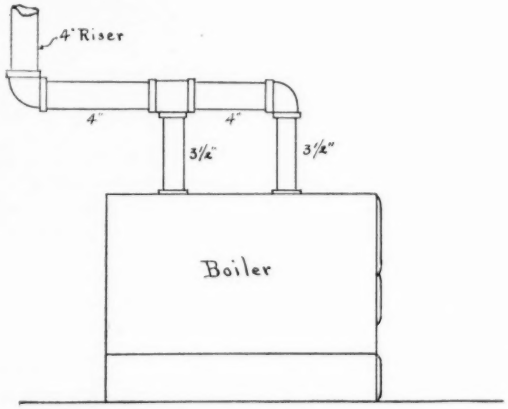


Fig. 3.

the boiler than are indicated on the sketches submitted, a slight change in the piping, which might be made, would possibly cure the trouble. We show the character of this change by the illustration, Fig. 4. This method of connecting the return simply creates a false water-line and floods all portions of it into which drips are connected. The 1¼-inch drip from the main is used both as a drip

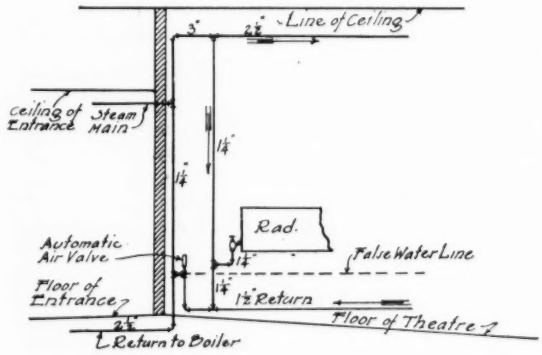


Fig. 4.

and as a balance pipe to the top of the loop, which creates the false water-line.

We cannot understand why the 2½-inch return is reduced to 1½-inch where drop is made in boiler room, and why it is again increased to 2 inches, as it enters the boiler, although these sizes are indicated on correspondent's sketch. If a return as large as 2½-inch is required, it should continue this size to the boiler.

AIR-BOUND RANGE BOILER STOPS FLOW OF HOT WATER TO BATH.

Editor "Domestic Engineering":—Fig. 1 is a sketch of a bath room, which I was recently called in to fix. The piping appears all right, but it won't furnish any hot water. Water can be drawn from the hot water faucet when its supply pipe is cold but not when it is hot. I took the union off at the top of the boiler, and the water started to flow.

Can you tell me where the trouble lies?

Indiana. C. G. J.

It seems quite evident that air accumulating in top of range boiler is the cause of the trouble.

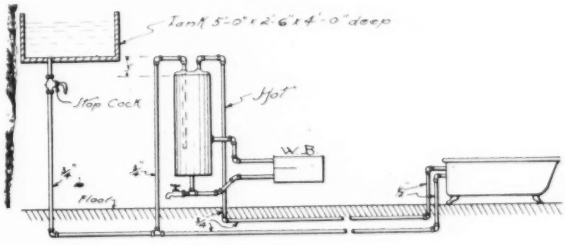


Fig. 1.

If correspondent will run a ¼-inch pipe up from top of hot water pipe, extending it over and into tank, as shown in Fig. 2, he should entirely eliminate the trouble.

This allows all air, in boiler and in hot water distributing pipe, to escape to the atmosphere. But a stop cock should be put on at A, and checked down till it is open just enough to let the air out and no more.

If this cock is not installed, or not checked down, there

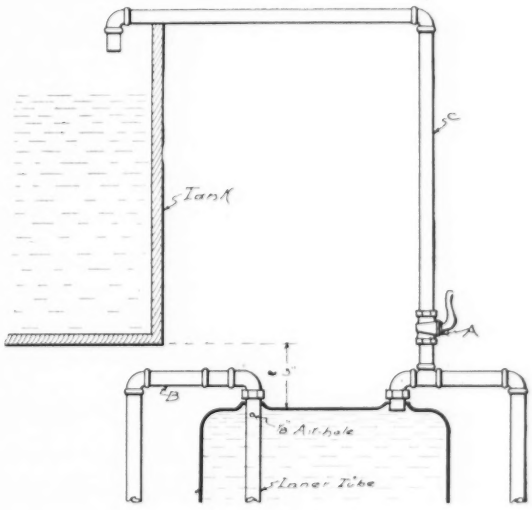


Fig. 2.

is a liability of air being sucked down into the hot water pipe, which will materially diminish the flow of hot water at bath.

An air vent hole must be drilled through top of inner tube where shown to allow air in top of cold water pipe at B to be forced into the boiler. Thus the vent C will entirely relieve all air from boiler and connections and insure a flow of hot water at bath.

William Enright, a pioneer master plumber and one of the organizers of the Master Plumbers' Association of San Francisco, Cal., died April 16th, at his home in that city from heart failure. He was in his eighty-first year and had lived in San Francisco since 1862. Mr. Enright, who was born in Limerick, Ireland, leaves a widow, three sons and two daughters.

LEGAL QUESTIONNAIRE

What is an Employer's Duty to His Employes in the Matter of Hiring Competent and Safe Fellow Employes? Can a Demand Note Presented for Payment Fourteen Months After Date be Collected from Endorser?

By "The Judge"

DUTY EMPLOYER OWES TO HIS EMPLOYES IN THE MATTER OF HIRING COMPETENT AND SAFE FELLOW EMPLOYES.

Editor "Domestic Engineering":—I employ a number of men in my steamfitting shop. Two of the steamfitters got into an argument recently and one of them was rather badly beaten up. The one, who got the worst of the fracas, now claims that I am responsible because I was negligent in employing and continuing in my employment a man whose temperament, habits and characteristics were known to me, and which rendered him unsafe and dangerous as a fellow workman.

As a matter of fact, the only thing that ever came to my attention, or the notice of my foreman, was a slight altercation several months ago, between the man complained of and another workman. The "dangerous" man was slightly intoxicated at the time and did nothing more than make a threat.

What attitude should I take with regard to this claim?

L. S. H.

Answer: Unless you suspect that the employe, who now claims damages, will be able to produce evidence that you had considerably more knowledge of the "dangerous" man's temperament and habits than you have stated in your question, I should most certainly refuse to pay any money to settle the claim. He may place his case in the hands of somebody who thinks that he can force you to a small settlement, but if you do settle, and it becomes known that they forced a settlement, however small, you run the danger of other similar claims.

An employer owes a certain duty to his workmen when he hires their fellow workmen. To quote from a case: "Ordinary precaution in this regard must be used, not only in the initial employment, but also in observance of conduct after the relation of master and servant has been established, in order to ascertain that the employe may not become a menace to the safety of those about him. The duty resting on the employer to guard against the employment of incompetent servants is the same whether the incompetence arises from ignorance of the work to be done and physical or mental incapacity to perform it on the one hand, or on the other hand, from an unbalanced mind or self-indulgent appetite and vices.

"Incompetence may be shown by evidence of a general reputation to that effect. Single instances of inefficiency by an individual are not admissible to prove incompetency. But knowledge by an employer, or those acting for him, of particular acts by an employe of such character or number as to show him to be a dangerous man with whom to work, may tend to show negligence in failing to discharge him."

The above is a comprehensive statement of an employer's duty. A more definite statement cannot be made, for this kind of a case is one which hangs on the particular facts in each instance.

In view of the condition of the labor market in these times, when so many of our younger men are across the water fighting the Germans, it is well to take somewhat more care than usual in selecting employes. As a general proposition, an employer does not need to worry much over such claims, for it almost always happens that undesirable workmen are weeded out of a working force long before they become a menace to fellow workmen. However, it would be a safe course to pursue, if the employer should take more notice of complaints against a "dangerous" man than he formerly did.

DEMAND NOTE PRESENTED FOR PAYMENT FOURTEEN MONTHS AFTER DATE CANNOT BE COLLECTED IN SUIT AGAINST ENDORSER.

Editor "Domestic Engineering":—Under the following facts have I a good claim against the endorser of the note? On November 29, 1915, a customer being hard up and asking for time to pay my bill, I agreed to wait if he would give me a demand note, endorsed by a responsible party.

The customer gave me a demand note for $250.00, endorsed by a third party, on November 30, 1915. Matters drifted along for many months, the customer calling me up from time to time and stating that his plans for securing some money had not been put through and asking me to wait. I did wait, and the longer I waited the less frequently I remembered that I held the note.

In January, 1917, after we had taken account of stock and I had taken a look at my assets, I remembered the note in question and presented it at a bank for payment. It was not paid and notice of dishonor was duly sent to the endorser. The endorser now claims that the note, being a demand note, should have been presented for payment long before it was, and refuses to pay it. The customer is still hoping to pay but cannot at this time.

E. F. G.

Answer:—Under the law of the state in which your transaction took place, "E. F. G.," I am of opinion that you have lost your rights against the *endorser*. The statute expressly provides that: "In determining what is a 'reasonable time' or an 'unreasonable time' (in which

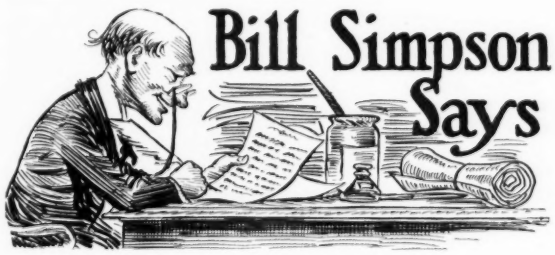
*Every Effort is made to the End that these Answers may be authoritative. However, we cannot assume any Responsibility because of the very Nature of the Service, which is rendered without a personal Interview.—Editor.

suit must be brought against an endorser of a note in such a case) regard is to be had to the nature of the instrument, the usage of trade or business, if any, with respect to such instruments, and the facts of the particular case."

It has been held, in a case involving this very point, that in the absence of evidence to show a usage of trade or business to the contrary, or of facts in the particular case which bring it within the rule as to "reasonable time," mentioned above, a demand note must be presented within sixty days in order to hold the endorser.

There do not seem to be any circumstances in the case you state which would prevent the endorser from successfully setting up a defense to any suit which you might bring against him that you had waited too long. While it is not a hard fast rule by any means, and has many exceptions, it is a fact that a court does not look with favor upon a man who sits back and does nothing when he has a right to take action. This is particularly true when a person, like an endorser, may have had a right to believe, from silence on your part, that the note had been presented and paid by the maker; for it is not a common practice for business men to delay making demand for payment on a demand note until fourteen months have elapsed.

It is stated in the court decisions, that under some circumstances it may be a difficult question to determine what shall be a reasonable time within which to demand payment of the maker of a demand note in order to charge the endorser. However, on the facts presented by you, fourteen months would undoubtedly be held to be an unreasonable time.



(With Apologies to K. C. B.)

I met Howard Texter
* * *
Last nite
* * *
Down by The Star Garage
* * *
In Akron. His pap was
* * *
Born in Alsace-Lorraine
* * *
And is German. Before
* * *
The United States got into
* * *
The War, Howard was rootin'
* * *
For the "Fatherland" and
* * *
Teaching his boy to Goose-step.
* * *
I knew he had changed
* * *
His noshuns about the War
* * *
Becauz he is a loyal citizen
* * *
Of America and has sense
* * *
Enuff to appreciate the
* * *
Advantajes of a Government
* * *
Of the Pepul, By the Pepul
* * *
And For the Pepul, insted of
* * *
Of—By—and For the Kaiser.
* * *
I sed to Texter: "Howard,
* * *
Did you buy Liberty Bonds
* * *
This time?" He replyed:
* * *
"You bet I did, Bill
* * *
And I bought all I could
* * *
Afford to Buy. Gretchen and
* * *
I scraped together every single
* * *
Dollar we could and bought Bonds.
* * *
I'm for America—first, last
* * *
And always. She's welcome
* * *
To every penny I got
* * *
And I don't care whether
* * *
I get any interest or not.
* * *
This is a fight-to-a-finish.
* * *
If the Allies lose, you
* * *
And I lose, personally,
* * *
Everything we have.
* * *
The stakes are high
* * *
And the Game's going to go
* * *
To the Man who can Hold
* * *
Out the Longest.
* * *
And—that's going to be US."
* * *
When I came home I got
* * *
A thinkin' about Texter
* * *
Backing the U. S. to his
* * *
Last penny—and I went
* * *
Down to the Bank and
* * *
Doubled my subscription
* * *
For Liberty Bonds.
* * *
If the U. S. loses this war
* * *
The money we got now
* * *
Won't be worth a lead dime.
* * *
Did you buy all you could
* * *
Afford to Buy?—or are you
* * *
Doin' like Ananias and
* * *
Saphira—"holding out?"

Avoid This Motto, Boys.

She—"What is the correct translation of the motto of that lovely ring you gave me?"

He—"Faithful to the last."

She—"The last! How horrid! And you've always told me before that I was the very first."—"Minneapolis Tribune."

The DAY BOOK *of the* BON TON DE LUX PLUMBING & HEATING CO.

Hank Olson and Jerry Dolan Formed a Partnership and Opened a Plumbing and Heating Business January 1, 1918 —Dolan Has Decided to Keep a Day Book, in Which He Records the Interesting Happenings of the Day

Continued from Page 89 in the April 20th Issue.

April 13, 1918.

Well, we put in our application to the Master Plumbers' Association, and if they accept it, we'll be members of the local and that takes in the State and National, too.

April 14, 1918.

Our application was accepted and now we're members of the Masters' Associations. Hanley gave us a few copies of the National Bulletin, and it's chuck full of good stuff. They wanted everybody to fill out the blank on the back of one copy and sent it into the National office, giving the amounts making up the overhead in the shop, but we can't do that yet because we only been in business a little while, but they are going to have a big professor down in St. Louis look over the sheets and make a report on them and take it from me, Steve, that will be some report. Then they've got some forms in the Bulletin like some of the big plumbers are using for job work and billing, and they look all right too. Me and Hank have been talking it over, and I guess that maybe we'll have the printer around the corner turn out some of that stuff for us.

April 15, 1918.

This is the Wholesale Plumbers' Field Day again. All we got to do is go down and pay for the stuff we bought last month or lose 5 per cent on it. As luck would have it, we didn't buy very much junk last month, so it comes easy this time.

April 16, 1918.

Me and Miss Penwell has got it all figured out now. You see the Master Plumbers are going to hold a National Convention at St. Louis in June, and so we're going to get married and go down there for a trip. It won't cost much except the railroad tickets, because she has a lot of relatives that lives right close to St. Louis on the McKinley Interurban Line, and we can stay with them, and I can run into St. Louis every morning on the street car and take in the Convention and find one of those Child's Restaurants or a salesman with an elastic expense account, when it's time to eat dinner and then take the street car out to Edwardsville or Staunton in the evening and eat some of that good old small town grub like they have when the minister or someone drops in for tea, and so that way we'll have some wedding tour and it won't set us back very much either.

April 17, 1918.

Well, I got a War Garden started now. Since we've been getting up on the new schedule, it leaves so much time at the end of the day that I didn't know what to do with myself, but Miss Penwell fixed that all right. She says that she is getting tired of living in a flat and so we went out beyond Lake Street, and we rented a little house and there is a vacant lot right side of it and so she made a dicker for the house and the lot and told me to get the lot plowed and I had that done and then we got some tools and some seeds and we been working like a couple of heavers getting that garden started. We got pretty near everything for that garden, even some sun flowers and morning glories along the side of the fence and we're going to do our part towards busting the high cost of living right smack on the nose. When I learned to wipe joints, I burnt my hands a few times but nothing like that gol-darned hoe and spade done to them.

April 18, 1918.

Things have been coming pretty good for awhile. There wasn't very much to do, but nobody was hollering much either, and me and Hank was beginning to think that this business is all right, but this morning we got one that made up for what we been missing. During the first month we were in business, we installed a tank heater in a flat building over on Maple Street, and this morning about nine o'clock we got a call that it had busted and to come right over. Well, we took the flivver and went over and found the fire pot section cracked and leaking to beat the band. We shut off the water, and Hank started to take the heater apart and I went down to get a new firepot, and when I got there I found that they were out of heaters of that size and I also found out something else. They said that they didn't guarantee that kind of tank heaters, so it's up to me and Hank to stand the loss unless we can get the owner to stand it.

April 19, 1918.

That tank heater seems to be on us all right. We went out and bought another heater from a plumber that had a second hand one and put it in, so they can get hot water until the other fire pot section gets here. All the pictures that you see of this kind of tank heaters shows them connected to tanks and there is nothing said about the pressure they will stand, but now it seems that we are expected to read between the lines and put in reducing valves and safety valves to keep the heaters from breaking when the pressure goes up. Of course, they tell us that the heater is guaranteed but come to find out all that means is that if it is defective in making the manufacturer will stand for the new part, but the plumber has to furnish the labor for making the change and take all the abuse from the owner and his agent and his janitor and his tenants, so it looks like the plumber gets the short end of the deal.

(To be Continued.)

May 7 and 8, 1918—The annual convention of the Pennsylvania State Association of Master Plumbers, at Scranton, Pa., with headquarters at the Hotel Casey

May 13 and 14, 1918.—The ninth annual convention of the National Pipe and Supplies Association, at Cleveland, O., with headquarters at the Hollenden Hotel.

May 14, 1918—The 24th annual convention of the Master Steam & Hot Water Fitters' Association of New York, at Syracuse, N. Y., with headquarters at the Onondaga Hotel.

May 14-15, 1918.—The annual convention of the New Jersey State Association of Master Plumbers, at East Orange, N. J.

May 16 and 17, 1918.—The eighth annual convention of the North Carolina Master Plumbers' Association in Charlotte, N. C.

May 20 and 21, 1918.—The annual convention of the Kentucky Master Plumbers' Association, at Danville, Ky.

May 20, 21 and 22, 1918.—Annual convention of the Texas State Association of Master Plumbers and of the Texas Association of Sanitary Engineers, at Houston, Texas.

May 28 and 29, 1918.—Annual convention of Michigan State Association of Master Plumbers, at Flint, Mich.

June 3, 4 and 5, 1918.—The annual convention of the National Association of Master Steam and Hot Water Fitters, at Chicago, with headquarters at Hotel Sherman.

June 4, 5 and 6, 1918.—The thirty-sixth annual convention of the National Association of Master Plumbers, at St. Louis, Mo., with headquarters at the Planters' Hotel. Convention sessions in Exhibit Building.

June 17 and 18, 1918.—The thirtieth annual convention of the American Boiler Manufacturers Association, at Philadelphia, with headquarters at the Bellevue-Stratford Hotel.

September 3, 4 and 5, 1918.—The annual meeting of the American Society of Sanitary Engineering, at Chicago, with headquarters at the Congress Hotel.

THE ASSOCIATED MASTER PLUMBERS OF TEXAS TO MEET AT HOUSTON.

The Associated Master Plumbers of Texas, will hold their annual convention at Houston, Texas, May 20, 21 and 22, 1918, according to official announcement just issued by President A. Collman and Frank Lightfoot. President L. McNamara, of the National Association of Master Plumbers, has promised to attend and address the convention, and the officers of the state organization have extended an invitation to all master plumbers in the state to be in attendance. An exceptionally interesting and profitable meeting is, therefore, expected.

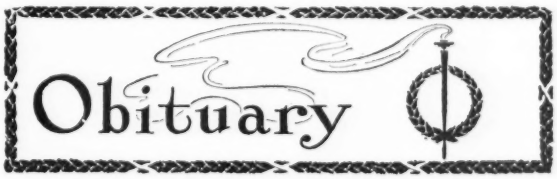
NORTHWESTERN MASTER PLUMBERS IN ANNUAL MEETING.

The Northwestern Master Plumbers' Association held its annual meeting in the Hotel Bartlett, Cambridge Springs, Pa., on Thursday, April 11th, with an attendance of more than sixty members. The officers and various committees submitted their annual reports and the convention closed with the election of the following officers: President, William Rowland, Youngstown, O.; vice-president, Frank D. McCue, Oil City, Pa.; honorary vice-president, A. C. Eynon, Canton, O.; treasurer, L. L. Lord, Meadville, Pa.; secretary, M. C. Judd, Meadville, Pa.; sergeant-at-arms, Mac H. Perry, Meadville, Pa. Board of directors: C. W. Wilson, Youngstown, O.; M. J. Murray, Jamestown, N. Y.; H. S. Smith, Warren, O.; H. P. Cahill, Akron, O., and W. J. Scholl, Youngstown, O.

Following the convention session, the delegates enjoyed an elaborate supper at the hotel, with cards and dancing as the two last numbers on the convention's attractive program.

NEW YORK STATE MASTER STEAM FITTERS TO MEET IN SYRACUSE.

The Master Steam & Hot Water Fitters' Association of the State of New York will hold its 24th annual convention at Onondaga Hotel, Syracuse, N. Y., on May 14th, 1918. It is hoped that all members of the association will attend this convention. War times are educational times and the Syracuse Association announces that members will be well recompensed for their attendance as important subjects will be discussed. Non-members are also invited to attend this convention to find out just what this association is doing to better conditions in war times.



Christian J. Anderson.

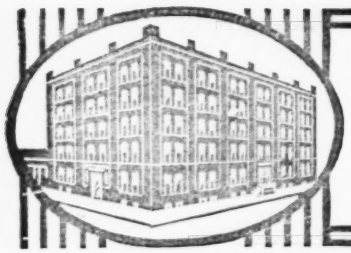
Christian J. Anderson, manager of the Minneapolis branch of James B. Clow & Sons, Chicago, died at his home in the former city, on April 18th, in his forty-second year, following an attack of pneumonia. He was one of the best known sales representatives in the plumbing supply trade in the Northwest, having been connected with the Minneapolis office of the Clow concern for fifteen years. He was a member of the Knights of Pythias, the Elks and the local Athletic Club. His wife and four children survive him.

Hugh J. Barron.

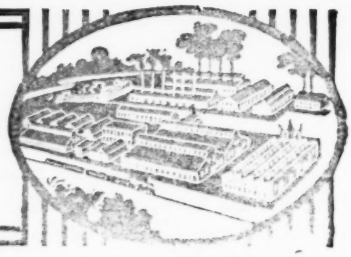
Hugh J. Barron, a well known heating engineer, died at his home on Morningside Avenue, New York City, on Saturday, April 6th, in his 63rd year. Mr. Barron was born in England, but came to America with his parents when a boy. He was a steamfitter by trade and later in life engaged in the business of installing steam heating systems. He was one of the organizers and charter members of the American Society of Heating and Ventilating Engineers, and served on its first Board of Managers. His wife survives him.

J. M. Jacobson

J. M. Jacobson, a well known master plumber of Minneapolis, Minn., died at his home in that city on Wednesday, April 10th, after several weeks' illness. Mr. Jacobson had been engaged in the plumbing business in Minneapolis for more than a quarter of a century and he was very active in association affairs, having served as president of the Minneapolis and the Minnesota Associations. During the last decade of the 19th century and the first decade of the 20th, he was also a regular attendant at national conventions. His wife and two daughters survive him.



Among the Wholesalers and Manufacturers



LOUIS LIPP CO. RETIRES FROM PLUMBING MANUFACTURING FIELD.

The Louis Lipp Co., of Cincinnati, O., manufacturers of plumbing fixtures for a quarter of a century, will retire from this business this month following the sale of its factory in Winton Place, a suburb of Cincinnati, to the Edwards Mfg. Co., in that city. The property involved in this transaction consists of a large plant, 50 x 145 feet, two stories high, with two one-story wings, each 60 x 100 feet. The plant is said to have been sold for $175,000.

THE McMANN SUPPLY COMPANY SOLD AND MOVED.

The business of the McMann Supply Co., Inc., at 56-58-60 Gold Street, New York City, has been sold to Chas. H. Hirschfeld and Geo. Steller, who will continue the business under the same name at 319 Pearl Street. Mr. Steller has been connected with the McMann Co., since 1888 and Mr. Hirschfeld organized the Central Plumbers Supply Co., in 1904. He sold his interests in this concern recently in order to purchase the McMann Supply Co., in partnership with Mr. Steller.

NOW IN MERCHANTS' LOAN & TRUST BUILDING.

The Harry Verbeck Co., of Chicago, has just moved its offices from 175 West Jackson Boulevard to Room 1005 Merchants' Loan & Trust Building, 112 West Adams Street.

SUPPLY AND MACHINERY DEALERS' WAR CONVENTION.

The American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association, the Southern Supply and Machinery Dealers' Association, and the National Pipe and Supplies Association will hold their annual joint meeting at Cleveland, Ohio, during the week beginning Monday, May 13th, and ending Saturday, May 18th. One thousand men who are bearing the brunt of the unprecedented demand for machinery will gather from all parts of the country to lay plans, with the aid of government officials, to keep the great munition program going at top speed. This joint meeting will in reality be a big war convention. "No industry has a greater responsibility at this moment than the machinery men," said H. W. Strong, president of the National Supply and Machinery Dealers' Association, this week. "We must have men, but behind the men we must have ships and munitions, and behind the ships and munitions, machinery, more machinery and still more machinery. We are in this fight to a finish. The Germans have convinced us that the only way out of the war is straight through, and the American machinery industry is ready to carry it on to a knockout."

THE TRADE EXTENSION CAMPAIGN.

Frank S. Hanley, of New York City, secretary of the National Committee of the Confederated Supply Association, has just issued the following bulletin:

"A number of conferences have been held by committees representing this committee and the National Association of Master Plumbers, at Chicago, Indianapolis and Pittsburgh, for the purpose of stimulating the sale of plumbing and heating material. The general committee will be known as the Trade Extension Committee, the chairman of our committee being James F. Conran, of the Standard Sanitary Mfg. Co., Pittsburgh, Pa.; the committee from the National Association of Master Plumbers is under the chairmanship of L. McNamara, president thereof, 407 North Broadway, St. Louis, Mo.

"Some of the most prominent men in our industry are co-operating for the purpose of making this movement a big success. A sub-committee on advertising was named by the Trade Extension Committee for the purpose of outlining an advertising campaign, with a view to educating the trade to get out and hustle for renovation work. This does not apply solely to the installing end of these lines. Jobbers and manufacturers should make every effort to stimulate business. We are at war, and our Government does not look with favor upon the erection of new buildings, and there is therefore nothing left for us but the renovation of old buildings and dwellings, in the main. There is any amount of business to be secured in this direction if we will only get after it. It is up to our members to do this, and to advise with Chairman Conran or with President Koven, or with this office in regard to any suggestion which they may have to make toward this end. We welcome your active aid, and you can rest assured that anything that is put up to us will have prompt attention.

"At this time we direct your attention to the following paragraph from the very able and constructive report of the Water Supply, Farm Plumbing and Heating Committee: 'The committee calls attention to one other feature, which is at times liable to be illy considered. When one thinks of the farm field his mind is much more apt to drift to the great Middle West as being the principal market for water supply system, etc, whereas your committee is convinced that the market is in keeping with the population of the country, and therefore such sections as the East, where the population is dense as compared with the West, offers a greater market in proportion to the preponderance of farm population. This is not said in any manner detrimental to the Middle West, nor any other section, but we recommend it as a platform to follow in considering the distribution of the market.'

"The majority of the recommendations made by the Trade Extension Committee will be considered at a meeting of this committee in Cleveland, O., May 15th, next. In the interim no time is being lost by the sub-committees therefrom; the work is going on. Opportunity awaits you! May we expect your co-operation?"

ADVANTAGES THE BUYER DERIVES FROM THE TRADE ACCEPTANCE METHOD.

The Eastern Supply Association's Credit Committee has just issued the following bulletin:

What the Trade Acceptance Method does for the buyer:

1. Develops careful buying.
2. Enables him to keep better track of his outstanding obligations, thereby avoiding the evils of over-extension.
3. Strengthens his credit and puts him in the position of a preferred buyer.
4. Develops in him the habit of prompt payment and furnishes him with an excellent excuse for requiring prompt payment from his customers.
5. Enables him to realize that credit is as tangible as cash and should be guarded and used accordingly.
6. Eliminates wastage and lost motion attending the open book account method.
7. Is good business because it releases business capital for new transactions.
8. Improves the chances of the buyer of small means to operate in successful competition with the large buyer.
9. Helps the buyer by making him deal always in current transactions rather than in long drawn-out book accounts.
10. As the buyer often becomes a seller, the same advantages that apply to the seller apply to him.
11. Serves as a tonic to the business organizations concerned.
12. Prevents the accumulation of overdue accounts.
13. Develops a sounder and more serious attitude toward buyer's own obligations.

AMERICAN BUSINESS DOES NOT FEAR COMPETITION.

Supreme faith in the genius of our commercial public to use good common sense in the contemplation of after-the-war trade was expressed recently by Burwell S. Cutler, chief of the Bureau of Foreign and Domestic Commerce, in an address to representative New England exporters at Boston. "You cannot make me believe," he stated "that the sturdy figures who have in the last fifty years won a place for us as one of the three or four greatest world powers will ever be stamped into fear or uncertainty on account of what competition will do. When reconstruction is actually at hand the American business man will find perfectly normal ways of holding his own in every market of the world without recourse to any selfish national schemes designed to hoodwink our commercial brethren abroad. Indeed it may be assumed that our trouble will be one chiefly of satisfying the tremendous demand for our goods, both at home and abroad." Assurance that it is not in the power of any foreign government to make after-the-war plans at this time that will menace American trade was given by Mr. Cutler. "The big idea that I would leave with you is just this," he explained. "We need have no fear of what any competitor may accomplish to our disadvantage by legislation or by organization prior to the actual declaration of peace on all sides. Conditions are such that a policy adopted today will probably be discredited tomorrow or found useless."

Proposed Legislation in Congress.

The statement was made that while there has been a great deal of talk in Europe about plans and schemes for promoting trade when peace is made, very little governmental action has really been taken, for the reason that it is a very difficult matter to take action under present conditions. "On the other hand," said the speaker, "a glance at legislation proposed in our own Congress shows a discernment of trade necessity that cannot be denied. I refer to the trade-mark bill, whereby a product true to specifications may bear, under rules prescribed by the secretary of commerce, a distinctive mark for recognition abroad. Let me also mention the Foreign Exchange Bank, which it is proposed to place under the direction of the Federal Reserve Board, and do not overlook the bill establishing the right of seaport towns to declare themselves free ports under conditions laid down by the secretary of commerce."

The speaker declared that as a trade-promoting agency the Bureau of Foreign and Domestic Commerce was equal, if not superior, to the corresponding organizations in foreign governments, and that the truth of that statement has often been conceded by foreign officials themselves. The exporters present were urged to utilize more fully the economic laboratory which the bureau has built up during the last six years. "If used continously, the public will acquire habits of scientific precision which will prove a surer means to successful foreign trade than any other. It is not enough to be satisfied with casual applications for data from the bureau. Requests for information should automatically renew themselves so that the exporter is currently informed on the slightest change which affects his business abroad. If German efficiency comes from any one thing it is just that habit of laboratory thoroughness.

Headquarters for Country's Trade.

"You may look upon your Bureau of Foreign and Domestic Commerce as the headquarters for American business. Our success will be proportionate only to the use which you make of us, and I may state confidently that the Department of Commerce will receive from Congress funds and authority to exercise its functions up to the very limit of your requirements so long as you let them be known with the positive voice of people who have the right to command us."

H. S. Maddock, of the Thomas Maddock's Sons Co., of Trenton, N. J., who has undergone intensive training at Camp Dix, New Jersey, has been commissioned as first lieutenant.

C. K. Foster, vice-president of the American Radiator Co., Chicago, has recently returned to Washington, D. C., after a brief visit to the main offices of the concern at Chicago.

Frank Haber has been elected a member of the Board of Directors of the Central Foundry Co., of New York City. His election took place at the recent annual meeting of the company. He succeeds Waddill Catchings who recently resigned.

W. E. Clow, Jr., vice-president of James B. Clow & Sons, Chicago, who entered the service of the nation as a seaman at the Great Lakes Naval Training Station, some time ago, has been promoted to the rank of ensign, having been assigned to the training ship Isle de Luzon on the Great Lakes. His promotion comes as the result of hard work, persistent study and a special fitness for the new responsibilities.

L. Bruce Fulton, manager of the Chicago branch of the Standard Sanitary Mfg. Co., Pittsburgh, Pa., and W. T. Brace, manager of the Chicago office of the J. L. Mott Iron Works, New York, are both strong advocates of preparedness, particularly as it pertains to golf. They were staunch allies in former gutta percha offensives of the Western Trade Golf Association. Both are mobilizing brassies, niblicks and other equipment, perparatory to the opening spring drive of the association.

J. M. Marty, Jr., has resigned from his position as engineer and production manager of the Standard Pump & Engine Co., of Akron, O., to become service engineer for the Kelly Reamer Co., of Cleveland, O. Mr. Marty made this change to do his share in the "Industrial Army," as the latter company is doing a large amount of indirect government work.

J. B. Bernhard, manager of the Chicago branch of the Kanawha Mfg. Co., of Charleston, W. Va., has just returned from a business trip in the West. Conditions west of the Missouri River impressed him very favorably. He says the farmers are becoming more and more interested in heating systems for their homes and many have invested ample sums of money for such improvements.

W. C. Groeniger, state plumbing inspector for Ohio, and Harry V. Carson, of the Central Foundry Co., New York City, who sailed for Egypt and Palestine some weeks ago, with the Red Cross Relief Expedition, have arrived at Brindisi, Italy, according to a postal card received by T. J. Claffy, assistant chief of the Bureau of Sanitation, Chicago,. The mission of Messrs. Groeniger and Carson is the solution of water supply and sewage disposal problems in the countries named.

W. E. Mellinger, who has been connected with the heating trade of the Middle West for thirty years, first as a heating contractor in Chicago, and later, for thirteen years, Michigan representative for the Cameron-Schroth Co., of Chicago, has just migrated to East San Diego, Cal., where he is establishing a rabbitry to "do his bit" for Uncle Sam by raising rabbits.

Lee A. Kelly, manager of the New York office of the Thomas Maddock's Sons Co., of Trenton, N. J., has enlisted in the United States Ordnance Department for immediate service,

W. W. Hughes, the well-known master plumber of Minneapolis, Minn., has spent two weeks selling bonds for Uncle Sam. He belonged to a strong arm squad, which went for big game and got it.

W. R. Marshall, well known to our readers on account of his many articles on sales letters and advertising which have appeared in "Domestic Engineering's" columns during the past years, has deserted the plumbing supply field to join an advertising company, which will give him larger opportunities to concentrate all his efforts on the work which has claimed his best thoughts for many years. Mr. Marshall advises that he is now a full-fledged advertising director, particularly in direct advertising, and he signs himself "Publicity Director."

L. H. Drury, of the American Radiator Co., Chicago, has recently returned with his family from Washington, D. C., where they went to bid adieu to his son, Corporal Clark Drury, who is attached to the United States Marines stationed at Quantico, Va. Mr. Drury states that the capital city is surcharged with the spirit of war activity. That Uncle Sam means business is very evident to the visitor to the city.

W. F. Ingals, sales manager of the Central Tube Co., of Pittsburgh, was in New York City last week on a trip to the eastern jobbing centers.

Robert C. Goldbeck has recently joined the sales force of the Harry Verbeck Co., at Chicago.

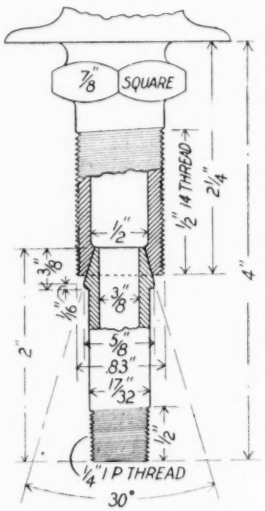
William Roseman has joined the sales force of Hercules Chemical Co., of New York City, and will cover the New England territory in its interests.

G. H. Young, manager of the Chicago branch of the Burnett-Larsh Mfg. Co., of Dayton, O., has recently returned from a trip to the home offices and plant of the company.

H. E. Agness, representative of the Chicago Faucet Co., Chicago, made a trip this week to Camp Grant, where he visited Sergeant E. E. Brown, secretary of the concern.

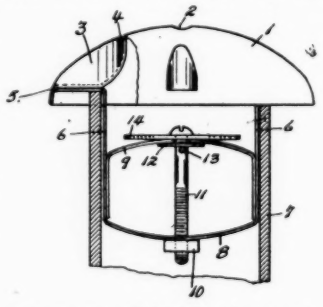
THE N. A. B. M. STANDARD BASIN COCK, SHANK AND TAIL PIECE.

The accompanying sketch is a reproduction of a blue print of the standard basin cock, shank and tail piece, adopted at the recent meeting of the National Association of Brass Manufacturers, at French Lick Springs, Ind. This blue print has just been issued by Wm. M. Webster, commissioner of the association, and it will no doubt prove of great interest to the plumbing trade. Mr. Webster calls special attention to the fact that the diameter of the hole in the tail piece coupling nut is nine-sixteenths of an inch. It is the intention of this association to adopt other standard measures from time to time.



A VENT CAP FOR SOIL PIPES.

The accompanying sketch shows a new vent cap for soil pipes which has recently been invented by Jos. M. Schrems, of Saginaw, Mich. This cap is described as being made of 18-gauge metal pressed into form and will fit either standard or extra heavy soil pipe. As may be noted from the sketch, four depressions are made in the surface of the cap to form support and bearing for same, so that the clamping device is only needed to hold it on to the pipe and lock it in place. A very slight turn or two with a screw driver will fasten the vent cap so that it cannot be pulled loose.

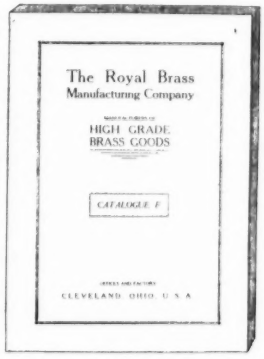


The Fogarty Plumbing Co. is the style of a new concern, which has recently opened a plumbing and heating establishment at 112 N. Main Street, Miami, Okla. This business will be conducted as a branch of the Sanitary Plumbing & Heating Co., of Springfield, Mo., and will be in charge of Thomas Fogarty, who would like to receive catalogues from manufacturers of goods in these lines.

TRADE LITERATURE.

The accompanying cut is a miniature reproduction of an advance copy of a new catalog, which J. B. Wise, Inc., of Watertown, N. Y., is publishing at the present time. This large catalog illustrates and describes in detail the "Wiseco" line of plumbers' sanitary brass goods. An exceptionally carefully compiled index will, no doubt, make it a favorite with the plumbing trade for reference purposes. The book contains 272 pages, 6¼ by 9 inches in size, and is bound in cloth.

The Royal Brass Manufacturing Co., of Cleveland, O., has just issued a neat catalog illustrating and describing its line of plumbers' brass goods, including bibbs, basin cocks, bath cocks, hopper, sill, boiler drain and laundry drain cocks; compression and self-closing stops, stops and stop and waste cocks, showers and mixing valves, and shower accessories, etc. The catalog consists of 124 pages, 8 by 10¾ inches in size, and it is an attractive sample of the up-to-date printer's art.



A NEW EQUALIZING LOOP.

The accompanying cut illustrates a new vapor heating device which has just been placed on the market by the Hoffman Specialty Co., of Chicago, under the trade name of the Hoffman Equalizing Loop. In introducing this device to the trade, the manufacturers state that it has no moving parts and maintains a constant, unvarying boiler water line. The upper part of this loop is made of a special casting having a diaphragm just above the lower side inlet which divides the loop into an upper and lower chamber. The upper and lower openings are tapped for 1¼-inch pipe, and the upper and lower chambers are connected by two ½-inch pipes, screwed into the diaphragm, one of these pipes extending from the center of the upper outlet to a point below the diaphragm. The bottom end of this pipe is slotted vertically, and the other brass pipe is screwed flush with the top of the diaphragm and extends below the slotted pipe. The lower connection to the loop must always be directly connected, either to the boiler or to the steam main, the upper connection to loop being connected to the vertical return line, and its operation is described as follows: "As steam flows through the line connected to the loop, a certain amount of condensation flows with it, gradually filling the loop below the diaphragm. So long as the boiler pressure is above 10 ounces, the differential between the two lines is always 10 ounces no matter whether the pressure is 1 pound or 10 pounds, and this 10-ounce differential causes the water to stand in the vertical return pipe just 17 inches higher than the water line in the boiler, and the water loss from the boiler is measured by the quantity contained in the vertical pipe to a height of 17 inches."

NO EXEMPTION

By Strickland Gillilan, Author of "Off Again, On Again, Gone Again, Finnigin."

If you canot launch a bullet at the fiend across the sea,
Buy a bond!
It will reach its little target straighter than a homing bee—
Buy a bond!
If you've bought a lot before,
Don't believe you've done your chore—
Buy a half a dozen more!
Buy a bond!

'Tisn't often helping others helps yourself so all—at—once
Buy a bond!
Help the country, help your bankbook—every slacker is a dunce!
Buy a bond!
If your country's saved, all right!
There's your money, good and tight.
If it isn't—well, good night!
Buy a bond!

If the bond should prove a flivver, all the money that you save
(Buy a bond!)
Isn't worth a single penny—what is money to a slave?
Buy a bond!
It will keep the Kaiser's hordes
Back, as well as two-edged swords!
If your pocket book affords,
Buy a bond!

If you are a common tightwad, loving no one but yourself,
Buy a bond!
It's the surest and the sanest way to save your measly pelf—
Buy a bond!
If you are a decent critter,
'Gainst the foe of freedom bitter,
God Almighty hates a quitter—
Buy a bond!

A Sporting Compromise.

A canny Scot owned a wonderful badger it was reported no dog could tackle. However, a friend of his had a dog he proposed to back against the badger, and a match was in due course made for £100, to come off in two months' time.

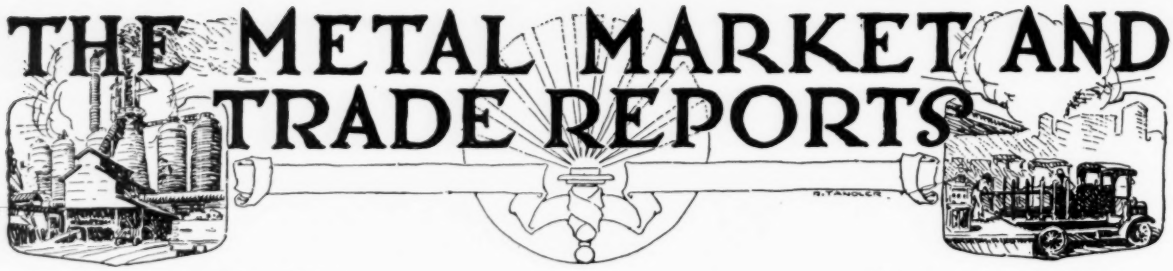
As the time drew near there were rumors that all was not right with the dog, and the Scot's friends were making sure of victory for him.

Imagine their surprise and disgust when they heard that McTavish had accepted £50 as a compromise in lieu of the £100.

"You've been done, Mac," said one of them. "That dog is so mangy and unfit he could not kill a rat."

"Ah, ah!" said McTavish, "I dare say, but my badger is dead.—"London Globe."

THE METAL MARKET AND TRADE REPORTS



Steel and Iron.

There was a steady decline in the demand for commercial steel last week, but requirements for the Government increased. Steel for shipbuilding is in large demand and is likely to increase as the year advances. The extremely heavy demand for steel and the strain upon the mills is shown by the necessity of apportionment by preference claims between the several departments of the Government. Claims for priority up to now have been between the Government and private consumers, but now that the needs of the Government have grown to absorb nearly the entire output of the industry, it has come to the point where Government requirements must be regulated and allotted in order of importance. It has been agreed between the War Industries Board, the Shipping Board, the Emergency Fleet Corporation, the Railroad Administration and the Council of National Defense to apportion the steel required for national purposes in order of urgency. It has been decided that just now the needs of the Railroad Administration for steel to build locomotives and that of the Shipping Board of steel plates are equal and of first importance. The second preference will be given to the Railroad Administration for steel needed for locomotive repairs, construction and equipment work and trackage extensions and repairs. The only exception to the program, as outlined, is made in favor of steel plates for the construction of naval vessels, which take precedence over the material required for merchant vessels. The necessity of economizing in steel is acknowledged, and the use of wood for building freight cars is urged. No improvement in the general position of pig iron developed last week, although production is gradually increasing. Practically all of the iron passing into consumption has been on sold-up contracts, so that increased production only means that the furnaces are given a chance to gain a proportionment tonnage on their unfilled orders. Increased coke receipts and improved traffic conditions are aiding furnace operations, but demand is ever increasing, so that the scarcity of iron is still keenly felt. Prices are based upon the old standard grades of No. 2 foundry and basic at $32 at the furnace, and will be operative until July 1st.

Copper.

The copper market continues to be one of routine. As consumers want copper, they apply to the well known channels. In due course the order is passed upon by the Copper Producers' Committee, and an order of release is issued to the producer, when the metal is duly delivered with but little delay. The consumer, having filed a statement of his requirements with the copper committee, can count on a fair allotment and knows about what to expect. On the other hand, production is ample to meet all reasonable demands, and a shortage is not to be looked for. Demand from smaller consumers is light and promises to continue so, as the bulk of finished products is for Government account. The price remains at 23½ cents per pound for carload lots, and 24.67½ cents for lesser quantities.

Tin.

The tin situation is very serious. New business has come to a halt, because it is impossible to secure Straits or Banka tin at any price in any position, and Chinese tin is held at so high a figure that American buyers find it almost prohibitive and buy as sparingly as possible. Sellers ask 88 cents for Chinese at the Coast, and for April shipment 85½ cents.

Lead.

A fair demand for spot lead developed last week, which imparted to that position a strength relatively greater than for future delivery. Spot lead was quoted at the end of the week at from 7.15 to 7.22½ cents.

Spelter.

The market for prime Western spelter continues dull, but considerable tonnage of high-grade spelter is coming into consumption on Government account. The price at New York for spot spelter is 7¼ cents.

New York Old Metal Market.

The following prices are current for old metals.

	Buying.	Selling.
Copper, heavy	22 cents	23½ cents
Copper, light	18½ to 19 cents	21½ cents
Copper wire	20 to 21 cents	22 cents
Brass, heavy	13½ to 13¾ cents	14½ cents
Brass, light	10½ to 11 cents	12 cents
Brass clippings	15 to 15½ cents	16½ cents
Old aluminum	20 to 20½ cents	21½ cents
Lead, heavy	6 to 6¼ cents	6¾ cents
Tea lead	5 to 5¼ cents	6 cents
Zinc scrap	5½ to 5¾ cents	6½ cents
Solder joints	14 to 15 cents	16 cents
Cocks and faucets	17 to 17½ cents	18½ cents
Mixed babbitt	7½ to 8 cents	9 cents

Chicago Old Metal Market.

Chicago wholesale dealers' prices are nominally as follows:

	Buying.	Selling.
Heavy yellow brass	15 to 15½ cents	16½ cents
Brass, light	11 to 11½ cents	13 cents
Red brass	21 to 22 cents	23 cents
Cocks and faucets	16 to 17 cents	18 cents
Copper, heavy	21¼ to 22 cents	23 cents
Copper wire	21 to 22 cents	23 cents
Copper, light	19¼ to 19½ cents	21 cents
Lead, heavy	5 to 5⅛ cents	6 cents
Lead dross	4 to 4⅛ cents	5 cents
Tea lead	4½ to 4¾ cents	6 cents
Cast aluminum	22 to 23 cents	24 cents
Solder foil	17 to 18 cents	19 cents
Solder joints	14¼ to 15 cents	16 cents
Mixed babbitt	8 to 8¾ cents	8½ cents
Old iron pipe (per ton)	$23.50	$24.00

Sanitary Enameled Ware.

An advance of approximately 10 per cent in the prices of sanitary enameled ware has been announced by manufacturers. The advance went into effect April 20th.

Sanitary Earthenware.

The cost of sanitary pottery to the jobber has been advanced this week approximately 15 per cent.

The Pipe Market.

There is no change in the pipe market. Quotations on less than car lots of full weight steel pipe remain as follows:

	Butt Weld.		Lap Weld.	
	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	38	10	....	....
½ inch	42	26	....	....
¾ to 3 inch	45	30	....	....
2 inch	....	....	38	24
2½ to 6 inch	....	....	41	27
7 to 12 inch	....	....	38	23
12 to 14 inch	....	....	28½	....
15 inch	....	....	26	....

The quotations apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong steel pipe in less than car lots, quotations are as follows:

	Extra Strong.				Double Extra Strong			
	Plain Ends Butt Weld.		Plain Ends Lap Weld.		Plain Ends Butt Weld.		Pl'n Ends Lap Weld	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛, ¼ and ⅜ inch	31	11	....	....	....	....	....	....
½ inch	36	16	....	....	27	7	....	....
¾ to 1½ inch	40	20	....	....	30	10	....	....
2 to 2½ inch	41	21	....	....	32	12	....	....
3 inch	41	21	....	....	....	....	....	....
2 inch	....	....	33	14	....	....	25	6
2½ to 4 inch	....	....	36	17	....	....	27	8
4½ to 6 inch	....	....	35	16	....	....	26	7
7 to 8 inch	....	....	31	12	....	....	21	2
9 to 12 inch	....	....	26	7	....	....	....	....

With threads only, the basing discount is 1 and 1½ points lower. With threads and coupling the basing discount is 3 points lower. The quotations apply to all quantities less than car lots.

Quotations on full weight genuine iron pipe, in less than car lots, are as follows:

	Butt Weld.		Lap Weld.	
	Blk.	Galv.	Blk.	Galv.
⅛ and ¼ inch	16	+13	....	....
⅜ inch	17	+12	....	....
½ inch	21	1	....	....
¾ and 1 inch	26	8	....	....
1¼ inch	26	8	11	+6
1½ inch	26	8	18	2
2 inch	....	....	19	3
2½ to 6 inch	....	....	18	3
7 to 12 inch	....	....	18	3

These quotations are f. o. b. Pittsburgh, and apply to all shipments from stock, regardless of quantity.

On extra strong and double extra strong genuine wrought iron pipe, with plain ends and in less than car lots, the quotations are as follows:

	Extra Strong				Double Extra Strong			
	Butt Weld.		Lap Weld.		Butt Weld.		Lap Weld.	
	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.	Blk.	Galv.
⅛ to ⅜ inch	13	+7	....	....	....	....	....	....
½ inch	18	+2	....	....	5	+15	....	....
¾ and 1 inch	24	4	....	....	10	+10	....	....
1¼ inch	24	4	10	+10	10	+10	....	....
1½ inch	24	4	16	+4	10	+10	5	+14
2 inch	....	....	18	+2	....	....	5	+14
2½ to 4 inch	....	....	20	List	....	....	7	+12
4½ to 6 inch	....	....	19	+1	....	....	....	....
7 to 8 inch	....	....	11	+9	....	....	....	....
9 to 12 inch	....	....	6	+14	....	....	....	....

These retail prices are f. o. b. Pittsburgh, and apply to all quantities except in car lots. With threads only, the basing discount is 1½ points lower. With threads and couplings, the basing discount is 3 points lower.

To ascertain the price in any city, deduct the proper freight rate from Pittsburgh to that city. To illustrate: ¾ to 3-inch steel pipe, black, is 45 per cent off, Pittsburgh. The freight to Chicago is 31 certs, or it would be 45 per cent minus .031, or .419 per cent Chicago for 10 certs a hundred freight you should deduct one point

NORTHERN CANADA MAY HAVE GREAT COPPER FIELD.

Relative to the existence of copper deposits in the Far North of Canada, Professor Frecheville, of the Royal School of Mines, says that specimens or nuggets of native copper were first obtained from the Esquimaux, who used the metal for their implements, and the occurrence was subsequently confirmed by the few travelers who have been in that region. It is interesting and significant to note that the specimens of rock which have been brought from there point to the occurrence being geologically similar to that of the highly productive and profitable copper mines of the Lake Superior district of the United States.

The new copper district referred to is situated east of Great Bear Lake and along the course of the Copper Mine River, which runs north from about latitude 65 degrees, into Coronation Gulf in the Arctic Ocean. Evidences of the occurrence of copper are also reported as far east as Bathurst Inlet, and on Victoria Island.

There appears to be no doubt as to the above facts, Professor Frecheville says, and consequently the present position may be summed up by saying that there may be a great copper field somewhere in that region awaiting development, and that the locality is worthy of being carefully examined and prospected, both from a Canadian and from an Imperial point of view.

TO MAKE NORMANDY A GREAT STEEL CENTER.

French steel producers and the French Government are co-operating in plans to make Normandy the center of a great steel industry. Germans had obtained control of a large part of the vast iron ore deposits in Normandy when the war began, and several million dollars had been put into mills and works.

The French Government took over all German interests in the properties after the outbreak of war and the works were turned into factories for war munitions. The development is still going on, and it is planned to so build up the industry that Normandy after the war will be one of the most important steel districts of France.

THE "ENEMY TRADING LIST" REVISED.

A revised "Enemy Trading List" which contains more than 5,000 names, and for the first time including enemy firms in the neutral countries of Europe, was issued this week by the War Trade Board, in Washington, D. C. It was established in conjunction with Great Britain and France, to unify the efforts of the Allies to keep their products from reaching the enemy.

In pointing out that the list does not contain the names of all persons with whom it would be illegal to trade, the board warned exporters that the omission of a firm's name from the list does not justify commerce with it. The listing of an "enemy" or "ally of enemy" partnership is equivalent to listing all the partners individually, as well as the association and the listing of a member of a partnership applies against trade with the partnership as well as trade with the listed person. All branches of a firm also are included, although only one address may be given in the official list.

Grand Rapids, Mich.—C. J. Kuennen, of 155 Crescent Avenue, has secured the contract for the installation of plumbing in the three additional stories now being added to the Crathmore Hotel, in this city.

AMONG THE PLUMBING AND HEATING CONTRACTORS

Illinois

Chicago and Vicinity.

A general holiday was observed by men of the plumbing trade in Chicago, on Saturday, April 20th, when the building industry held a monster Loyalty and Liberty Loan parade, in which it is estimated that over 50,000 men of different trades participated. The journeymen plumbers, headed by Simon O'Donnell, the leader of their organization, turned out in large numbers. All plumbing shops throughout the city were closed during the day.

The Chicago Master Plumbers' Association, in recent letters to its members, urges master plumbers to co-operate with the Board of Examiners of Plumbers in preventing the encroachment by unlicensed plumbers into the field of the legitimate trade. In cases where the unlicensed craftsman is violating the state plumbing law, the legitimate trade is requested to report such violation at once to the Board of Examiners of Plumbers.

The Carl J. Stein Co., of 853 State Street, has recently been awarded the contract for the installation of modern plumbing in a hospital building to be erected in conjunction with the Municipal Contagious Disease Hospital, at a cost of $750,000, at Thirty-first Street and California Avenue.

John Degnan, of 631 La Salle Street, will install plumbing in a warehouse and garage to be built, at a cost of $175,000, at 215-221 Washington Street.

E. J. Claffey, of 12 Illinois Street, has secured the contract to install the heating system in a store and flat building to be constructed, at a cost of $100,000, at 173-181 Cicero Avenue.

Thomas Donlan, of 7245 Halsted Street, has been awarded the contract to install the plumbing in a bungalow to be built at 5139 Sawyer Avenue.

Schampel & Dougherty, of 173 West Washington Street, will install the plumbing in a garage to be constructed at a cost of $12,000 at 2929 North Crawford Avenue. The plumbing contract went to John Flannigan, of 5061 Lake Park Avenue.

H. Peckham, of 209 Milwaukee Avenue, has secured the contract for installing the heating system in a rear addition to a factory to be erected, at a cost of $20,000, at 4501-4517 West Twenty-sixth Street. The plumbing contract was awarded to W. P. Arnold, of 2345 West Twelfth Street.

W. F. Bahn, of 3608 Southport Avenue, has been awarded the contract for the installation of plumbing in a public garage to be built, at a cost of $12,000, on Southport Avenue.

W. Compton, of 1009 East Forty-seventh Street, has been awarded the contract for the installation of the plumbing in a residence to be erected, at a cost of $16,000, at South Haven, Mich.

William Lees, of 548 Washington Street, has been awarded the contract for the installation of the heating system in a garage and arena to be built, at a cost of $15,000, at 548 Washington Street.

W. McCarthy, of 2556 Division Street, will install the plumbing in two residences to be erected at 5120-5122 Grace Street.

F. E. Pearson, of 2643 North Kedzie Avenue, has secured the contract for the installation of plumbing in a $10,000 public garage and machine shop, at 1337 Irving Boulevard.

M. J. Corboy has the sympathy of his many friends on account of the death of his son, Raymond M., which occurred April 14th, at Pasadena, Cal. The funeral was held Saturday, April 20th, from the family residence at 4742 Grand Boulevard, Chicago, the interment taking place at Calvary Cemetery.

Other Cities in the State.

P. Meeker, of 2741 Market Street, East St. Louis, has secured the contract for remodeling the plumbing system in the Hotel Illmo.

Fred Siefert & Son, of 207 North Glendale Avenue, Peoria, have recently been awarded the contract for the installation of the heating and plumbing systems in a repair shop to be erected, at a cost of $10,000, in that city.

J. W. Clegg & Son, of Ottawa, will install the plumbing and heating systems in various buildings of the tuberculosis sanitarium in that city.

Fred Ellis, of 1071 Park Avenue, Winnetka, has secured the contract for installing the heating in a hostess building to be erected, at a cost of $30,000, at the Great Lakes. The plumbing contract went to George Parks, of 566 Railroad Avenue, Winnetka.

Hitchcock Bros. Co., of 104 South Washington Street, Peoria, has been awarded the contract for the installation of a modern heating system in an apartment building, to be erected, at a cost of $35,000, at 217 North Underhill Street.

Missouri

St. Louis and Vicinity.

One hundred thousand free tickets will be distributed for the National Plumbing Supply Show which will be held in St. Louis the week of June 3, in connection with the annual convention of the National Association of Master Plumbers of the United States. This will be done as a part of the plans to impress upon the general public just what the plumbing industry has been striving at in its efforts to make the land a better place in which to live.

Special invitations will be extended to all Ex-National presidents of the Association to attend the convention. Wives of delegates will be given special invitations also to come to St. Louis and be here during the progress of the convention as guests of the Ladies' Auxiliary of the St. Louis Association of Master Plumbers. This organization is now completing plans for the entertain-

ment of the women, the entertainment to consist of socials, musicals, sight-seeing excursions, picnics and teas.

Talks will be made before the convention by some of the leading manufacturers of plumbing goods in the United States. At the same time arrangements are to be made whereby a representative of the United States Health Department will be here to address the convention.

The local committee who have in hands preparations for the National Sanitary Exhibits, which will be given here in connection with the annual convention of the National Association of Master Plumbers of the United States, are receiving a large number of applications for space from manufacturers. Indications continue such as to cause the general belief that this exhibit will be the greatest one ever staged by manufacturers of plumbing and heating supplies in the United States. All have joined heartily in a great effort towards inspiring the plumbing business of the country to overcome any possible depression caused by the war.

The local committees are progressing with their plans for giving all who come a right, royal, southern-style welcome—to shower upon them the hospitality for which St. Louis is noted. Nothing is being left undone towards making the convention a brilliant success.

The St. Louis Association at its meeting this week, listened to a Liberty Loan speech and then subscribed, as an organization, for $500 worth of the Third Liberty Loan Bonds. The Association had bought the same amount of Second Liberty Loan Bonds. Many have, as individuals, purchased heavily and have pledged to buy still more.

Part of the Delegation from St. Louis and St. Louis County at Missouri Master Plumbers' recent Convention in Kansas City, Mo.—From "Domestic Engineering" Photo.

Ex-Governor Joseph W. Folk attended the meeting of the St. Louis Association of Master Plumbers, Monday night, at the Knights of Columbus hall, addressing the gathering on general industrial topics.

John W. Mitchell, former St. Louis master plumber and a member of the association, has become a military man. He is now with the engineers at Fort Meyer, Va.

Thomas J. Sheehan, St. Louis master plumber, who recently was appointed member of the Police Board, was guest of honor of the Amicorum Club about ten days ago at the Buckingham Hotel. He was presented with a gold shield emblematic of his new office. Sheehan has for years been very active in association affairs.

The Ladies' Auxiliary to The Master Plumbers' Ass'n of St. Louis, Mo.

The Ladies Auxiliary to the Master Plumbers' Association of St. Louis, Mo., was organized last week, Mrs. L. McNamara, wife of the president of the National Association being elected president, and Mrs. A. A. Zertanna, wife of the National secretary, being elected secretary. The organization has 120 charter members, and these ladies are now making elaborate preparations to entertain the ladies who will attend the convention in June. It is expected that a greater number of ladies will attend this convention than has ever been the case on similar occasions, the wives and daughters of all the members of the National Association having been invited to attend the convention whether or not their husbands are delegates. This new organization plans to do its utmost to make the ladies' visit in St. Louis one solid round of pleasure, while the men are engaged with the weighty problems at the convention.

Kentucky

Louisville and Vicinity.

As predicted several weeks ago the majority of the plumbing contracts now coming out represent additions to local industrial plants, although there is some improvement shown in small building, and plumbing permits have increased in number considerably since the first of the month. However, there is very little new work, of any size, going up with the exception of enlargements of plants, which is going on at a good pace.

A number of the Louisville plumbers took a very active part in the Liberty Loan drive, which took place on April 16th, 17th and 18th, during which the city raised about $10,000,000, which was considerably over the amount allotted. The Louisville Water Co., at a recent meeting of the board, voted to subscribe for $300,000 of the third Liberty Loan bonds.

Bearing out the statement, that restricted building would affect plumbing to a degree, is the weekly report of Dun's for Louisville, part of which follows: "Restricted building operations affect to some extent the electrical, plumbing and kindred lines, but directly and indirectly, government work is making up the deficit."

The Maysville Water Co.'s force and the plumbers of Maysville have been quite busy for the past week repairing water pipes all over the city. The cold weather of the past winter did considerable damage in the freezing of underground pipes, and the ground has just recently gotten in such condition that they could work in repairing these breaks.

F. H. Scott, of the Scott Plumbing Co., of Louisville, one of the latest additions to the city, is having no trouble in securing his share of the work that is being done, having received a number of nice contracts in the past few days.

W. H. Newman, of Louisville, has secured the contract for the plumbing to be installed in the Liberty Insurance Bank, which is doing considerable improving of its building.

Haller, Zehnder & Redman, of Louisville, have received a nice plumbing contract for the L. & N. Railroad Co., including the installation of 15 closets, 33 lavatories, 2 urinals, etc.

Gray & Tompert, of Louisville, have recently received plumbing contracts from the Louisville Bridge & Iron Co., and from the American Tobacco Co.

Philip Marker, a master plumber at 1518 Highland Avenue, Louisville, has filed a voluntary petition in bankruptcy.

At Dawson Springs, C. B. Shutes has sold his plumbing business to L. W. Hancock, who formerly worked for Mr. Shutes. Mr. Hancock will do business under the name of L. W. Hancock & Co.

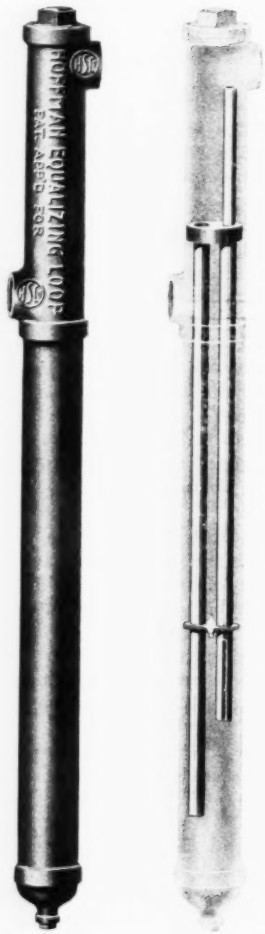
(Continued on Page 142.)

Make Vapor Heatin

by

Hoffman Equ

A Marvelous



Exterior View

Phantom View

WITHOUT moving parts or mechanical devices of an water line and a fixed differential of 10 oz. if boiler even should pressure go to 10 lbs. No burned boilers or cr

The HOFFMAN Equalizing Loop is made entirely of metal without moving or mechanical device of any kind. The upper part of the loop as shown in the a panying phantom view is made of a special casting having a diaphragm just abo lower side inlet which divides the loop into an upper and lower chamber. upper and lower openings of the loop are tapped for 1¼-in. pipe. The upp lower chambers are connected by two ½-in. pipes screwed into the diaphragm, these pipes extending from the center of the upper outlet to a point below th phragm as shown. The bottom end of this pipe is slotted vertically as shown in The other brass pipe is screwed flush with the top of the diaphragm and extends the slotted pipe.

The operation of the loop is peculiar in that it is entirely neutral, performing no tion except that of freely passing such condensation as may come to it so lo boiler pressure is 10 oz. or less. However, should boiler pressure exceed 10 oz., is pushed down in the loop until slotted pipe is uncovered, when steam immed passes through slot into return line, thus tending to balance pressure betwee lines. The function of the slotted pipe is to pass just sufficient steam into retur to maintain a constant differential of 10 oz. between the two lines.

So long as the boiler pressure is above 10 oz. the differential between the two is always 10 oz. no matter whether the pressure is 1 lb. or 10 lb., and this 10 o ferential causes the water to stand in the vertical return pipe just 17 in. higher tha water line in the boiler and water loss from the boiler is measured by the quantity tained in the vertical pipe to a height of 17 in.

The HOFFMAN Equalizing Loop is simple in construction but marvelous in o tion. Can be installed and works with equal success on new or old systems. HOFFMAN Equalizing Loop means more business for you and enables you crease your profits while increasing the efficiency of the systems you install. your regular jobber for prices and full Particulars. Now is the time to do it.

Hoffman Specialty Company

130 North Wells Street, Chicago

New York
512 Fifth Avenue

Los Angeles
215 W. 7th Street

HOFF VALV

Please mention "Domestic Engine

ing Absolutely Safe

by using

qualizing Loop

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of any kind, it positively maintains a constant unvarying boiler oiler pressure should accidentally or purposely exceed 10 oz.— or cracked sections when HOFFMAN Equalizing Loop is used.

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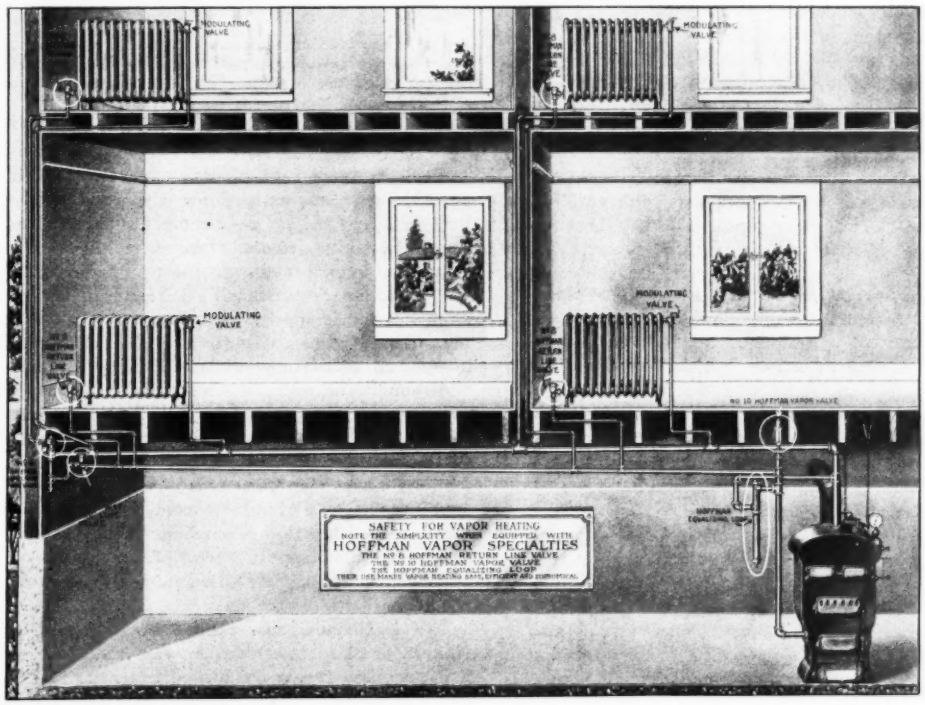

MODULATING VALVE
MODULATING VALVE
MODULATING VALVE
SAFETY FOR VAPOR HEATING
NOTE THE SIMPLICITY WHEN EQUIPPED WITH
HOFFMAN VAPOR SPECIALTIES
THE NO 6 HOFFMAN RETURN LINE VALVE
THE NO 10 HOFFMAN VAPOR VALVE
THE HOFFMAN EQUALIZING LOOP
THESE DEVICES MAKE VAPOR HEATING SAFE, EFFICIENT AND ECONOMICAL

The above illustration shows one way in which the HOFFMAN Equalizing Loop may be installed. The lower connection to the loop must always be directly connected either to the boiler or to the steam main as shown; the upper connection to loop being connected to the vertical return line. Its operation is as follows:

As steam flows through the line connected to the loop a certain amount of condensation flows with it gradually filling the loop below the diaphragm. The loop should always be installed so that the upper outlet will be at least 1 in. below the steam line to which the loop is connected so that as the condensation flows into the loop it will pass up through the ½ inch pipe into the upper chamber and thence directly into the return.

VALVES

Engineering" when writing advertisers.

Indiana

Indianapolis and Vicinity.

Resolutions providing for the immediate construction of an immense sewage disposal plant a few miles southwest of Indianapolis at an estimated cost of $1,912,000, were adopted recently at a meeting of the Board of Sanitary Commissioners of Indianapolis under the provisions of the new sewage disposal law, which was passed by the last legislature. The resolution states that the board has found that the water in White river is being polluted by the sewage from Indianapolis and that a sewage disposal plant is necessary. If it were not for the fact that the Government has assumed control over all municipal bond issues because the nation is at war, the adoption of the resolution would mean that measures would be taken at once to start work on the proposed plant. However, before the commission can issue the bonds to raise the money for the work, it must have the approval of the federal reserve board. The proposed plan would be constructed on the Sellars farm, which is situated southwest of the city at the junction of Big Eagle creek and White river. On this farm is situated the garbage reduction plant of the Indianapolis Reduction Company. The sanitary commission is considering buying this plant, and, if it is bought, it will become a part of the sewage and garbage disposal system of the city.

An enormous conduit will be constructed in the southwestern part of the city to pick up the sewage from the interceptors which now empty into White river. The conduit will run to the Sellars farm, where the sewage will be treated and turned into fertilizer for commercial purposes. The proposed plans call for the pressing of the sludge and the selling of the product for fertilizer. The Indianapolis board of sanitary commissioners is composed of Henry W. Klausmann, city civil engineer; C. H. Hurd and Jay Craven. Mr. Craven returned recently from Milwaukee and Chicago, where he investigated plants where sewage is treated for commercial uses.

Erection of a $400,000 building for the Indiana University School of Medicine on a site just east of the Long Hospital, in the western part of Indianapolis, will be started as soon as acceptable bids are obtained, it has been announced by the university trustees. Medical students at the university will be trained there instead of at the present building just west of the state capitol.

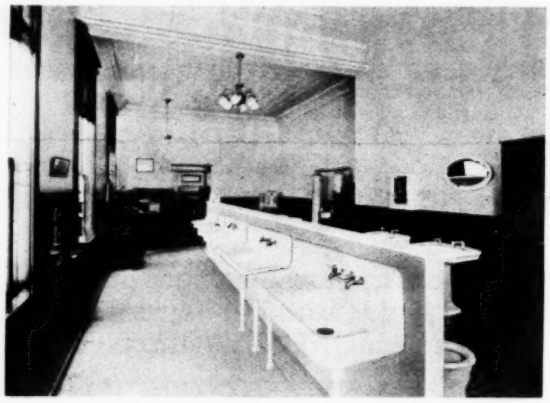
Other Cities in the State.

About 500 residents of Mishawaka have appealed through a petition to the Board of Public Works in that city asking that a comfort station be constructed in Battell Park and that it have a ladies' restroom in addition to the other necessary conveniences. The petition also calls attention to the fact that a public comfort station in the central part of the city is a dire necessity and should by all means be constructed this year. The board gave the women the assurance that the station at the park would be built but did not give any date as to when the work of construction will begin.

Since 1915 there has been a steady decline in building in Evansville, according to a report just completed by Edward Kerth, building inspector. Mr. Kerth attributes the decline to conditions brought about by the war. During the month of March building permits were issued to the value of $52,107, and for the same month of last year the total valuation was $80,945, in 1916 the permits totaled $139,490 and in 1915 they totaled $402,237.

Permits to build or remodel houses and other buildings at Huntington for the first three months of the year, are almost double in amount to those issued for the same time in 1917. Permits have been issued for the building of thirty-two new dwellings so far this year, as compared with ten permits for the first three months of 1917.

W. W. Sibley & Co., plumbing and heating contractors at South Bend, have just completed their new show room at 125-127-129 South St. Joseph Street, and those who have seen it say it is without question one of the finest in that section of the state. Everything in the way of plumbing and heating goods is to be found on display.



The Showroom of Bachmann Bros., at Laporte, Ind., which won the first prize, a silver loving cup, at the recent annual convention of the Indiana Society of Sanitary Engineers, held at South Bend, Ind.

Kokomo's Proposed Plumbing Ordinance.

Kokomo master plumbers, who for the last several years have been striving for city legislation providing for certain sanitary requirements, are endeavoring to have a new city ordinance, which would place certain restrictions on plumbing work done in the city, passed by the Kokomo city council. The ordinance, which the plumbers say is similar to those now in effect in Logansport, Huntington, Lafayette and other Indiana cities, was introduced in the council last Monday night.

Although the ordinance is considered a necessary step forward by the plumbing and heating contractors of Kokomo, many protests have been raised against it. One of the sections of the ordinance, to which the most objections have been raised, is the one providing for the appointment of a plumbing inspector by the secretary of the board of health. According to the ordinance the inspector would inspect each job of plumbing and the plumbing could not be used unless passed by the inspector.

The ordinance has caused so much discussion in Kokomo and so many voices were raised in protest that it is probable that a committee from the Kokomo Chamber of Commerce will be appointed to go over it and try to modify some of the so-called objectionable features. The purpose of the committee, it is said, would be to modify the ordinance so that it would be fair to the city and at the same time conform strictly to sanitary plumbing conditions.

The ordinance, as it was introduced at the council, is as follows:

"Section 1. Be it ordained by the common council of the city of Kokomo, that there be and is hereby created in said city the office of inspector of plumbing; the duties of said office to be filled by the secretary of the board of health. It shall be the duty of said inspector of plumb-

ing to inspect all plumbing and house drainage in said city, and do all other things needful or proper in carrying out the provisions of this ordinance.

"Section 2. Be it further ordained by the common council that no plumbing or sewer work shall be done in said city except in case of repairs or leaks without a permit being first issued therefor by the secretary of the board of health of Kokomo, Ind., and the said secretary of board of health shall be given power to refuse to issue permits to any plumber until said plumber has filed with said secretary of board of health the map and specifications in detail showing the work to be done on said permit.

"Section 3. Be it further ordained by the common council that full power and authority is hereby given to the secretary of the board of health of Kokomo, Ind., to fully supervise, regulate and control within the provisions of this ordinance all plumbing done within the city of Kokomo, Ind., and it is hereby made the duty of the secretary of the board of health when any plumbing is done under a permit duty issued, said secretary shall cause said plumbing when completed, to be inspected by a competent disinterested plumber to be appointed by said secretary for the individual job, and it shall be the duty of the plumber, appointed to inspect the work, to thoroughly inspect it without charge and to duly report to the secretary of the board of health aforesaid the acceptance or rejection of the work, and said inspector so duly appointed by the secretary of the board of health aforesaid shall have full power and authority to condemn and remove or order the removal of any particular job not in accord with this ordinance and when so ordered removed, it shall be unlawful for any person or persons thereafter to use or allow to be used said plumbing.

"Section 4. The meaning of plumbing as classified in this ordinance, shall mean any plumbing work done in any dwelling house, tenement house, apartment house, factory, church, hall, public or private, opera house, stable, store, flat or separate apartment of any store or separate apartment of any flat building, or any other enclosed structure.

"Section 5. All house drains and sewer pipe beginning at a point three (3) feet from outside the foundation wall shall be constructed of what is known to the trade as extra heavy cast iron soil pipe and fittings, and extend undiminished to a point at least two (2) feet above the roof.

"Each house or building must have an independent drainage and sewer system. Drainage or soil pipe exposed in the basement or elsewhere inside the building may be run with wrought iron galvanized pipe having screwed recess drainage fittings.

"Cleanouts shall be placed in all lines where same enter basement and at the foot of each stack, also at all right angle turns in soil waste lines, cleanouts to be provided with a brass plug and of a size corresponding to the place used.

"No soil or waste pipes to which closets are connected shall be less than four (4) inches internal diameter.

"All horizontal waste lines shall be laid with a gradual fall of not less than two (2) inches to ten (10) feet. All horizontal waste lines and stacks must be made permanently secure by such methods and material as apply to the individual job, subject to the approval of the inspector.

"All right angle turns where possible shall be made with Y branches and one-eighth (⅛) bends or long sweep curves.

"Joints between cast iron pipe and fittings must be

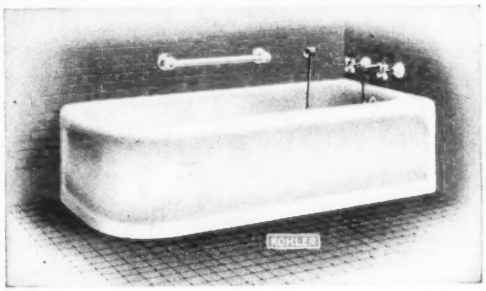


Plate F-12-TL "Viceroy"
(Pat. Applied For and Name Reg. U. S. Pat. Off.)

The "Viceroy"

—your customers will like it—

THE "Viceroy" never fails to secure favorable comment wherever it is shown. Your customers—whether they want something handsome, durable, hygienic or whether they demand all three qualities—will be highly pleased with the exceeding all-around value and desirability of the "Viceroy."

The "Viceroy" is justly referred to as America's foremost built-in bath.

All KOHLER Ware is made with that minute attention to detail that results in a high-class, finished product.

For years we have been making baths, sinks and lavatories on which we could be proud to put our name. The result is that today KOHLER Ware is almost invariably the choice of wise and discriminating buyers, and the name KOHLER in the enamel signifies the highest excellence.

KOHLER Ware is easily sold and is a distinct asset to your customers.

Write for a copy of our new book "Kohler Ware for Factories." It shows the KOHLER fixtures suitable for industrial institutions.

KOHLER CO., Kohler, Wis.

Founded 1873

Shipping Point: Sheboygan, Wis.

Boston New York Philadelphia Washington
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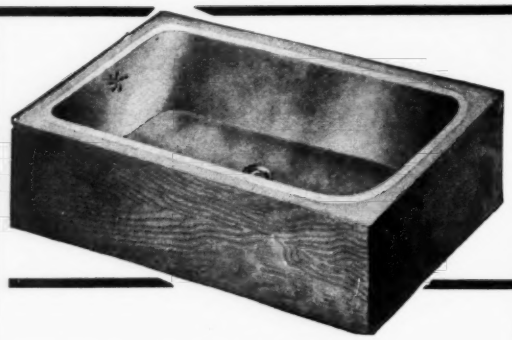


TRAGESER
Pantry Sinks

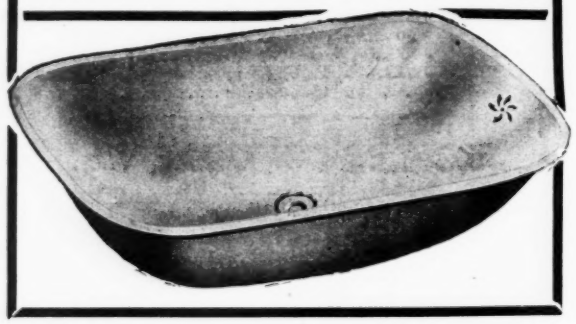
Each year the demand is increasing for strictly sanitary pantry sinks for the modern residence, hotel, restaurant, club, etc.

Trageser Sinks are made of German Silver, Copper or White Metal, which will not harbor dirt or germs. Any scouring material will keep them bright, shining and sanitary. A variety of styles to select from.

Trageser products make you strong with your customers and help to bring repeat orders.

Write for latest Catalog

John Trageser
Steam Copper Works
447-457 W. 26th St., New York City



made with gummed oakum, well packed, and molten pig lead, after cooling, must be well calked, the lead must not be less than twelve (12) ounces to each inch in diameter of pipe.

"All lead to lead, or lead to brass joints shall be wiped solder joints.

"All fixtures must be trapped separately, and fixtures over four (4) feet from the main vent stack must be vented separately through roof, or revented into the main stack at least three (3) feet above the highest floor where fixtures are placed.

"No fittings for future connections shall be placed in any soil pipe or waste pipe above the point of revent connection.

"Revent pipes to be not less than one and a quarter (1¼) inches inside diameter, except kitchen sinks which shall be not less than two (2) inches inside diameter, same to be either cast iron or galvanized iron pipe.

"Where vent pipes pass through roof, same are to be properly flashed with lead of four (4) pounds per square foot, or copper.

"Any fixture or receptacle requiring a trap to be under the floor shall be provided with a lead drum trap not less than three (3) inches inside diameter, provided with a brass cleanout screw or cap and placed in an accessible position for cleaning.

"Waste pipes from bath tubs, lavatories, foot tubs or receptacles are to be not less than one and one-half (1½) inches inside diameter.

"No floor drains will be permitted with less than four (4) inch deep water seal.

"Refrigerator waste pipes shall not be connected directly with any soil waste, vent or drain pipes, but shall be run separately to an open sink or receptacle properly trapped.

"Water pipes under side walks, concrete, or tile floors are to be what is known to the trade as extra heavy lead.

"Pipes where exposed to frost shall be packed in a manner to prevent freezing, as far as possible, and all water lines under first floor where there is no basement, shall be put under ground at a depth of eighteen (18) inches with all risers packed thoroughly.

"Lead pipes used in connection with any plumbing or drainage system shall be what is known to the trade as light. All traps or bends shall be of corresponding size, weight and thickness, and must be securely supported to prevent sagging.

"When any vent pipe of any description after extending through roof is within ten (10) feet of a door or window it shall be extended at least three (3) feet above same.

"No rain water conductor shall be used as a soil, waste, or vent pipe; nor shall any soil, waste or vent pipe be used as a rain water conductor.

"In no case shall a vent be connected with any chimney or flue; nor shall any chimney or flue be used as a vent pipe from any plumbing system.

"The placing of water closets in unventilated compartments is positively prohibited, in every case the room or compartment shall be open to the outer air, or be ventilated by an air duct or shaft.

"That part of the sewerage or drainage system from a point outside the basement wall shall be constructed of cast iron soil pipe, or salt glazed terra cotta tile, to and connect with the main city sewer, and to be laid with a gradual fall of not less than a one-quarter (¼) inch fall to the foot. If connections will not permit, same to be laid with the approval of the inspector. All joints of

terra cotta tile to be made one part of first-class cement and two parts of clean sand, the joints to be well filled and smooth and each joint shall be swabbed out on the inside so that no parts of cement remain inside of pipe or fittings.

"All sewer, vent and drain pipes inside of any building shall be tested with a water or peppermint test in the presence of the inspector, and all work must remain uncovered until it has successfully passed the test. All parts of system of plumbing or sewerage under test shall be absolutely water tight before receiving the approval of this department, and all defective pipe and fittings shall be removed at once and replaced with sound material.

"Section 6. Be it further ordained that any firm, or corporation violating any provision of this ordinance shall be guilty of a misdemeanor and shall upon conviction be subject to a fine of not less than five ($5) dollars and not more than fifty ($50) dollars for each offense, and each day's continuance of such violation shall continue a separate offense.

"That all ordinances or parts of ordinances in conflict with the foregoing ordinance are hereby repealed.

"Section 7. This ordinance shall be in force from and after its passage and publication according to law."

Pennsylvania

Pittsburgh and Vicinity.

Architect Harry Estep has plans ready for the remodeling of the Shady Avenue Baptist Church, at a cost of about $15,000. The work is to include entirely new heating and ventilating systems.

Architect Benno Janssen is preparing plans for a new store and apartment building to be built in Wilkinsburg by Thomas Rodd, Jr.

Bids are being received by the Baldwin township public school district, David S. Smith, secretary, Oak station, Pittsburgh, for installation of a hot water heating system in the Lafferty public school building.

Bids are being received for a three-story apartment building at Woodlawn, for L. D. Patras, of Franklin, Pa. The approximate cost is $20,000. The architects are Carlisle & Sharrer, Jenkins Arcade Building.

The Mellon-Stuart Co., Oliver Building, general contractors for 100 houses at Clairton, for the Carnegie Steel Co., are taking bids from sub-contractors.

Architect Paul W. Irwin, Renshaw Building, has been authorized to prepare plans for a new laundry building in the East End district, although the site has not yet been selected. The Modern Laundry Co. is to be the owner, and the approximate cost is given at $50,000.

Bids will be taken about May 1st for a church building on Home Street, Lawrenceville, for the Primitive Methodist congregation, to cost in the neighborhood of $30,000. Plans have been prepared by Architect W. G. Eckles, of New Castle.

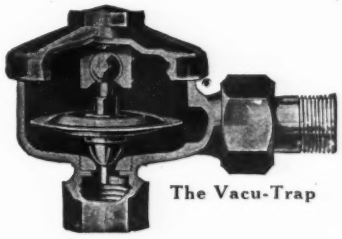
Steiner & Lewis have been awarded the contract for the plumbing and heating in the dormitory sections of the Carnegie Tech Schools, which are making extensive repairs and alterations.

The board of education at Scottdale has asked for sealed proposals for the heating and ventilating of the Chestnut Street public school building. Plans and specifications can be had by applying to H. M. Ruth, chairman of the building committee.

RELIABLE

Vacuum Heating Equipment

Is easy to sell, and there are no come-backs



The Vacu-Trap

The steamfitter who handles RELIABLE Equipment knows that it insures efficient and economical heating service, which always results in repeat orders.

It is easy and inexpensive to install, properly and permanently adjusted at our factory, guaranteed in every respect, and affords a good margin of profit.

RELIABLE

Vacuum Heating Systems

Air-Line Return Line

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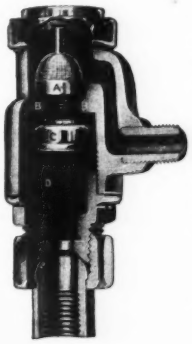

are giving satisfaction year in and year out in thousands of buildings throughout the country.

We also manufacture the American System of Temperature Regulation, which has proven its superiority.

Send for further particulars.

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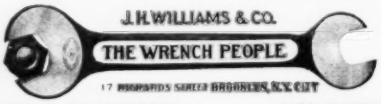
Factories and General Offices, CLEVELAND, OHIO

New York Chicago Cincinnati St. Louis
St. Paul San Francisco Atlanta Dallas
Milwaukee Boston Denver Pittsburgh

Williams "Vulcan" Chain Pipe Vises
are Powerful but not Destructive

Unbreakable
Broadly Adjustable
Universally Attachable

Three sizes, accommodating ⅛ to 8-inch pipe. Holds all records for service and the "Grand Prize" for excellence.



WESTERN OFFICE AND WAREHOUSE 17 SO. CLINTON STREET

TRADE MARK SIGNET REG. U.S. PAT. OFF.

No More Back Water
where the SIGNET Drain is used.
Keeps basement dry, clean and sanitary. A positive safeguard, either wet or dry, against sewer gas and water.

Brass working parts submerged—works automatically by gravity.
Always works. Always satisfactory.
Write for literature.

CRAMPTON-FARLEY BRASS CO.
KANSAS CITY, MO.

Used Everywhere—
Best Anywhere

BELL WASHERS

are celebrated for quality.

Recognized all over the country as the standard washer.

For your protection against inferior goods, every **Genuine Boss Washer** is stamped **"THE BELL."**

Our Hot Water Specialties

Bell Washers, Fuller Balls, Steam Valve Discs and Small Moulded Rubber Goods of all kinds.

Write for prices and discounts.

Samples by parcel post.

Trade Mark

Estate of Andrew Bell
2-4-6 Commercial St., Newark, N. J.

The largest building permit issued in the Pittsburgh district for some time was that given this week to the Pittsburgh Board of Trade for its new office structure on Shady Avenue, Seventh Ward, which is to cost $72,000.

The contract for a grade school building has been awarded to the George Schenck Co., Butler, Pa., by Architect W. G. Eckles. The school is to be at Bessemer.

W. N. Sauer, of the W. N. Sauer Plumbing Co., 804-6 Chestnut Street, North Side, is giving the plumbing section of the Builders' Exchange the most energetic sort of a canvass they have ever experienced in behalf of the Third Liberty Loan. Mr. Sauer is one of the most enthusiastic members of Team No. 13—note the hoodoo—which has turned in to date more than $283,250 for the Liberty Loan. Mr. Sauer declares there's nothing in an unlucky number, especially No. 13, and that it is going to finish in the highest place on May 4th, when the subscription "drive" ends. Mr. Sauer says he hopes to see the plumbing section top all the others in this campaign, and judging from present indication they are going to "go over the top."

Philadelphia and Vicinity.

M. V. Keough, of Twenty-third Street and Lehigh Avenue, is remodeling the plumbing in 80 houses in Germantown.

B. Landau, of 1216 North Fourth Street, will install plumbing and heating systems in a new store building at 532 Market Street.

P. J. Hoft, of 245 South Eighth Street, has secured the contract for the installation of plumbing and heating systems in a new hotel and store building at Sixtieth and Christian Streets.

The Philadelphia Master Plumbers' Association is doing good work in a big drive for the sale of Liberty Bonds.

The Philadelphia Jobbers' Association has also made a splendid showing in securing subscriptions for Liberty Bonds. Its drive is in charge of a committee consisting of M. D. Robinson, of Crane Co.; Geo. Bridgman, of Bridgman Bros. Co.; C. White, of Keystone Supply & Mfg. Co., and Leo Bernstein, of Glauber Brass Mfg. Co.

Wm. G. Cornell Co. has secured the contract for the installation of plumbing and heating systems in the new department store building at Eleventh and Market Streets. The contract amounts to $17,500.

A. M. Barclay, 113 North Sixth Street, will install modern plumbing in the Hotel Collonade.

Wilkes-Barre and Vicinity.

Business men and real estate owners, who are interested in the plan of establishing a community retail market on East Market Street, recently announced that they are ready to award the contract for the erection of the $100,000 market house. Bids have been opened, but the promoters would not announce the low man. The contract will be awarded very shortly at a meeting of the stockholders, and the board of directors. The market house will be the first of its kind in this city. Work of building it will start within the next few weeks it is expected. When finished it will occupy a plot of ground in the rear of East Market Street and bordered by South State Street. It will be 100 feet wide and 240 feet deep along South State Street. The main entrance will be on East Market Street. The structure will have modern plumbing, heating, ventilating and refrigerating systems.

Joseph G. Schuler, of Wilkes-Barre, has an extra large plumbing contract with the Atlantic Refining Co., in its new building on South Main Street.

Schriber & Tracey, of Wilkes-Barre, have secured a heating contract with the Hess-Goldsmith Silk Co., at Kingston.

Chas. J. Bauman & Co., of Wilkes-Barre, will install modern plumbing in the Ruddy residence at Plainsville.

Earl Rescorla, of Wilkes-Barre, is installing modern plumbing and heating systems in James McCann's two-family building at Larksville.

Fred J. Andes, of Wilkes-Barre, has secured the contract to remodel the steam heating plant as well as the plumbing in the three-story building of the Diamond Meat Co.

Evan Evans, plumbing and heating contractor of Georgetown, has just returned home from Columbia, S. C., where he was engaged in plumbing work at the army cantonment.

Cunningham Bros., who opened a plumbing and heating business at 477 South Main Street, about a year ago, have a large amount of remodeling and repair work on their books.

Tennessee

Pepin & McGrath, of 361 High Street, Memphis, report considerable remodeling work on their books this spring, following a rush of repair jobs in the winter months.

The Tennessee Plumbing Co., of 175 South Second Street, Memphis, is doing the plumbing on several new residences. H. A. Wendt and J. E. Bartz constitute this firm.

Quinlan & Butler, North Third Street, Memphis, have been awarded the steam heating contract on the St. John Methodist Church.

Frank Gill, plumbing contractor of 2166 Union Street, Memphis, is drilling the boy scouts in Lennox and makes a very efficient scout master. Mr. Gill has the contract for the plumbing on the new Lennox Methodist Church, at the corner of Cooper Avenue and Union Street.

C. Reynolds has moved his plumbing business to 2153 Young Avenue, Memphis.

E. R. Hendrix has moved his plumbing business to 1057 Blythe Street, Memphis.

E. L. Klenke, formerly in the plumbing business on Seventh Street, North Memphis, has gone into the military service of Uncle Sam. L. G. Loring, son of the city plumbing inspector in Memphis, has also entered the army.

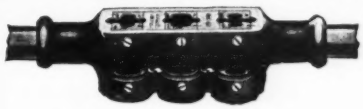
The Craven Plumbing Co., of Memphis, is doing the plumbing in a residence at 391 North Second Street.

The Laramie Plumbing Co., formerly on Manassas Street, has moved to 369 North Waldron Street, Memphis.

Gus Kippley, of the Sanitary Plumbing Co., North Main Street, Memphis, reports considerable repair work on hand and spring prospects good.

Hughes Heating Co., of Memphis, has been awarded the contract for installing steam heating in the new building and addition to Sacred Heart Academy at Helena, Ark. The contract amounts to $7,568. This company is also doing the steam heating in the Goodbar Building, a $2,500 job.

Over at Nashville the activities around Hadley's Bend, twelve miles out on the Cumberland River, near the Hermitage, the old home of Andrew Jackson, great things are going on in the building of the government's powder plant, where one hundred million dollars will be expended on a system of unit construction. Gravel and sand are being brought in at the rate of 7,840,000 cubic yards unloaded at one time by barge. A hotel with modern plumbing is to be built by the Southern Commissary Co. David L. Hirsch, an eastern man, is president of the company. A population of 7,000 workmen are said to be at Hadley's Bend already, with many yet to come.



Use a TRIO and Sing on the Job

TRIOS ARE ADJUSTABLE

Handy to Use and Nothing to Lose

Greenfield Tap and Die Corp.
Greenfield, Mass.

New York, 28 Warren St.
Chicago, 13 S. Clinton St.
Canadian Factory, Wells Brothers Company of Canada, Ltd., Galt, Ont.

GTD

NO ROOF IS SUPERIOR TO ITS FLANGE

Therefore, some PLUMBER is the father of every leaky roof.

The Bullard Roof Flange

is acknowledged as the only PERFECT FLANGE by busy men who have made satisfying installations.

THE BULLARD SPECIALTY COMPANY, Tiffin, O.

Dole PACKLESS GRADUATED RADIATOR VALVE

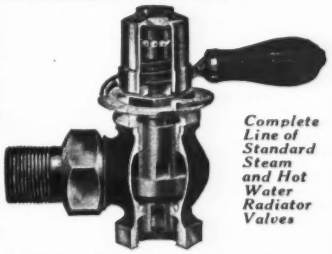
Embodies a new and exclusive DOLE principle by which you can have every degree of opening required in vacuum or vapor steam heating.

This Adjustment is easily made while the steam is on.

Nothing like it on the market.

Furnished with the DOLE without extra cost.

Write for new circulars.



Complete Line of Standard Steam and Hot Water Radiator Valves

THE DOLE VALVE CO. 208 No. Wells St. Chicago

TRY BLUE SEAL AT OUR EXPENSE

This liberal offer is for plumbers who have never used BLUE SEAL. It gives an opportunity to try at our expense the original Money Back Drain Pipe Solvent.

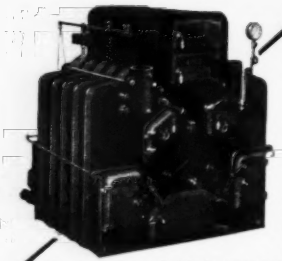
Cut out this advertisement, mail it direct to us with your own address—and your jobber's. We will then send you, transportation charges prepaid, six one dollar cans (2 lbs.) BLUE SEAL

DRAIN PIPE SOLVENT

Use these six cans according to directions to clear waste and drain pipe stoppages. If the Solvent does all we claim for it you are to send us $3.60 (special price for plumbers) within ninety days. If not the trial costs you nothing.

10,000 plumbers now use Blue Seal. Over 300 jobbers stock, sell and recommend it. If you haven't used it, this is your opportunity.

BLUE SEAL CHEMICAL CO.
417 E. 16th St. New York



The Newport

The Magazine Feed Boiler with the Adjustable Throat

The Patriotic Boiler

This year home owners will be forced to take various sizes and kinds of fuel—pea and buckwheat along with chestnut, range and egg. Also noncaking nut soft coal. The Newport is the only boiler which burns efficiently all these sizes and kinds—separately or mixed. Thus your customers are safe, for unusual fuel conditions are overcome. Send for "Newport Heating" document.

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Use Products

manufactured by

RAYMOND LEAD WORKS
BRANCH UNITED LEAD CO.
735 South Washtenaw Ave. CHICAGO

If Your JOBBER Cannot Supply You With Our Goods, Send Your Orders To Us Direct

Gerstein
Cistern and Riveted
Pressure Boilers
can be described in one word—
Everlasting

They not only *last* but give continuous satisfactory service.

Made in any size, pressure or capacity desired.

Write for details.

Gerstein Bros. & Cooper
Coppersmiths
1-3 W. Third Street So. Boston, Mass.

The Original
DONOVAN FLOOR DRAIN AND SAND ARRESTER

Note Interior Removable Chamber

For Sale by All Dealers

Made by SANITAS MFG. CO.
105 Washington St., Boston Send for Circular

Ohio

Cincinnati and Vicinity.

Delay in completing several construction contracts at the new East Side High School, in Hyde Park, resulted in an examination into the situation a short time ago by members of the Cincinnati Board of Education, the Peck, Hannaford & Peck Co., which is handling the heating, being one of the concerns called before the board to explain the reason for the slow progress made. A representative of the company explains that the state of transportation, as well as scarcity of certain materials, was responsible for the company's inability to get along with the work faster. If, however, the heating system contracted for, which is in process of installation, cannot be completed by winter, the company promises to have temporary heating equipment placed in such parts of the school as may be completed or ready for use by that time. The school is more like a university, in its plan, than the ordinary high school, as it consists of a group of buildings instead of a single structure, and the contracts are therefore extensive.

The plumbing work on four houses being built for the market in Oakley, a Cincinnati suburb, has been awarded by F. J. Muntz, the builder, to John Carroll. The work is going forward at once, and it is understood that the same builder will be active in that district on other property during the summer.

Joseph Hart has awarded the contract for the plumbing on a business and flat building on Harrison Avenue to Louis Boehm.

The Liberty Loan campaign on behalf of the third loan is in full blast in Cincinnati, with business men and others, in every walk of life, lending their full energies to the work of raising and then surpassing the quota of twenty millions or so allotted to the city. Every big plumbing supply house in the city has contributed handsomely to the purchase of bonds, besides giving their employes an opportunity to buy on liberal terms, and many executives and officers of leading establishments in all branches of the trade are also giving their time to the work of soliciting subscriptions to Uncle Sam's gilt-edged investment offering. The first week of the campaign saw subscriptions of more than $12,000,000 turned in, so that at that rate the desired goal of about double the amount of the minimum will be reached.

Other Cities in the State.

The housing problem, which has arisen in connection with the influx of workers in the several big munitions and other war-order plants in Dayton, has resulted in arrangements for stimulating the building of modern, moderate-priced residences, and the Dayton Real Estate Board is taking a prominent part in the plans. A site has been selected in the Fairview plat, North Main Street, on which will be constructed a model home, for which the materials will be donated and items of cost defrayed by the members of the exchange. The object of the construction of the house is to demonstrate that a handsome and low-priced all-around home can be built, even under present conditions; and co-operative arrangements to enable workers to buy homes on easy terms will be completed to aid in stimulating the building of similar residences.

Under a plan presented at Lima, by Elmer D. Webb and A. E. Henry, the city will have a public comfort station on the Public Square presented to it free of charge. Under the proposition as presented to the council, the

promoters will erect a building to cost about $30,000, on the site of a transfer station now on the Public Square, and thus provide for a transfer station and a comfort station. Their revenue will be derived from shoe shining, tobacco and other concessions in the building. It is understood that they agree to turn the title over to the city in eight years for a fraction of the cost of the enterprise, figuring that they can pay for the investment in that time.

Canton is another Ohio city, which has for the past year or more been confronted with a difficult housing problem, due to the enormous increase in industrial activity and the resulting increase in the number of wage earners seeking homes in the city; and the problem is now in charge of the Canton Housing Association, which is considering means of inducing builders to erect homes for the many wage earners. It is reported that one builder has promised to construct at once 20 modern homes, and that others are planning similar work, as a result of the association.

Georgia

Atlanta.

The Farrell Heating & Plumbing Co. has just secured the following contracts: Plumbing and vacuum heating in the country residence of Hon. Clark Howell, editor of "Atlanta Constitution," and the plumbing and heating in an eighteen-apartment building on Juniper Street. The former contract also calls for the installation of water supply and sewage disposal systems.

The Mendenhall Plumbing Co. has recently secured contracts for the installation of plumbing systems in several cottages in this city and in the Electric Supply Co.'s new building at 63 Peachtree Street.

The Stephenson Co., of 49 S. Forsyth Street, will install modern plumbing in a new $200,000 building, which the First Presbyterian Church is constructing at Peachtree and Seventeenth Streets. The company will also install the plumbing in an apartment building on Piedmont Avenue.

Gem Plumbing Co. will install plumbing and heating systems in the Fulton-Sage Training School for Wayward Girls, and in the Reeves Apartment Building.

Jennings & Gresham Co., of 242 Peachtree Street, has secured the contract for the installation of a heating system in a new garage building on Ivy Street.

The Richardson Plumbing & Heating Co. has secured the contract for the installation of plumbing systems in several new residences on Ponce de Leon Avenue.

The Capitol Heating & Plumbing Co. has just removed all the plumbing from the Billy Sunday Tabernacle. This company recently secured the contract for the installation of modern plumbing in an eight-family apartment building on Jackson Street and in T. T. Flagler's new garage on Ivy Street.

"Capt." W. H. Halderman, of Birmingham, Ala., Atlanta representative of the N. O. Nelson Mfg. Co., was recently in this city and secured a big stack of orders.

The Franklin Plumbing & Tinning Co., of 121 Whitehall Street, will install modern plumbing in A. H. Bailey's residence, a four apartment building on Mansfield Avenue, and in four other apartment buildings. This company will also install plumbing in five new cottages and in two new store buildings, as well as in many smaller dwellings in Capitol View. In 1912 and 1913 this concern averaged a cottage a day, installing over 700 plumbing systems during those two years.

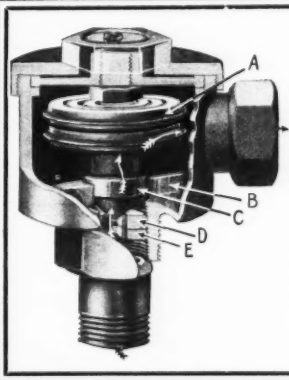
TRADE H MARK

See That This Trade Mark Is Stamped on Your Bibbs, Cocks, Stops and Valves

IT MEANS SERVICE

Immediate Shipments—Attractive Prices on All Plumbing Brass Goods.

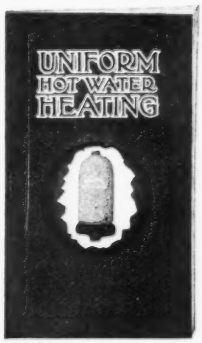
THE HAYDENVILLE COMPANY
Since 1845 **HAYDENVILLE, MASS.**



THE parties who think they can remove air from the radiators of a Vapor System without the application of a Thermostatic Trap are having a bad dream.

They need to be awakened

Bottum Valve Co.
213 W. Schiller Street
CHICAGO



Write for This Booklet

It tells you all about the

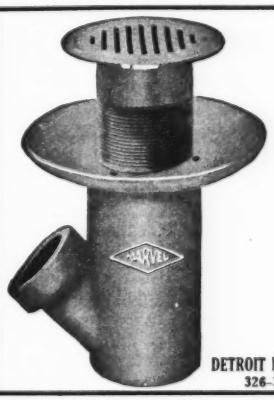
Ball Seal Generator

for Hot Water Heating.

This generator increases circulation and radiation. Prevents sluggish, water-logged conditions. Reduces fuel cost. Operates without noise. No attention needed.

Just what you want for that next job.

The Ball Seal Generator Co.
Easton, Pa.



MARVEL

"2 in 1"
Adjustable Shower Trap

embodies the double drainage principle.

Used by most discriminating plumbers. The trap you will prefer after giving it a trial.

Cast iron, black or galvanized. Tapped 2-in. iron pipe.

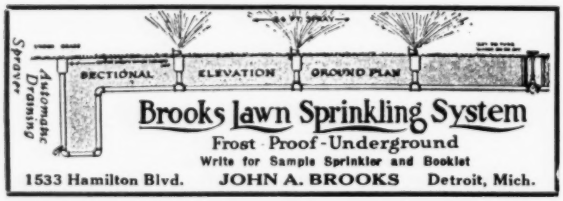
We make a complete line of the famous MARVEL Traps.

Order from your jobber.

Made by
DETROIT MARVEL BRASS MANUFACTURING CO.
326-332 Rivard Street, Detroit, Mich.

Plumbers Specialties
Brass Goods for the Plumbing Trade
Closet Tank and Seat Trimmings, Connected Waste and Overflows, Traps, Supply Pipes, etc.
Any Reliable Jobber can furnish the "Femco" Line from stock
Frost Manufacturing Co., Kenosha, Wis.

No. 2A Thermostat
ROBERTSHAW MFG. CO. YOUNGWOOD, PA.
The standard for 30-40 gal. boilers, and single coil heaters or equivalent. Has ¾-in. gas openings.
We Make All Sizes



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Frost-Proof-Underground
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are high grade, insuring maximum service and minimum expense
PHILIP HAAS CO., DAYTON, OHIO

Makes No Noise

A Quiet Pump in Your Home
You can keep Pump noise out of your home by keeping out the kind of a Pump that makes a noise.
The Geo. J. Roberts Co.
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Filters That Filter
All Types for All Purposes
The New York Continental Jewell Filtration Co.
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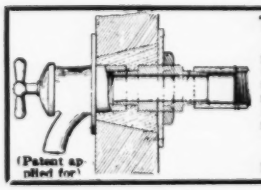
MARTIN PORTABLE VISE, STAND AND PIPE BENDER
You can bend ⅛ inch to ¾ inch without kinking. A strong vise that never lets loose. Vise capacity 2 inch. Requires no nails, screws or fastenings. Insert legs—that's all.
Write for 10-day free trial offer.
H. P. Martin & Sons, 621 East 2nd Street Owensboro, Ky.



THE LILGER LAUNDRY BIBB CONNECTION
is a practical device for laundry tray improvements. Easily attached. Holds bibb in place by nut and washer arrangement. Leak-proof. Saves time and money.
Order from your jobber. Write us for circular.
THE LILGER COMPANY
1246 W. 72nd Place, Chicago, Ill.

J. B. Grant has secured contracts for the installation of plumbing systems in the residences of Norman Miller and Mrs. Weyman and in the new Dunworthy Building.

C. W. Baxter Plumbing & Heating Co., of 75 S. Pryor Street, has just finished the installation of modern plumbing in a new ten-apartment building.

Moncrief Furnace Co., of 139 S. Pryor Street, installed the heating systems at Camp Gordon, and it has several contracts on its books for installing heating systems in public schools and churches in this city.

J. A. G. Beach, chief plumbing inspector of Atlanta, reported having issued 1,700 permits last year.

The Sanitary Plumbing Co., of Atlanta, has been awarded a number of good contracts.

John H. Lynch, of Atlanta, is engaged on the installation of plumbing at Camp Gordon.

Augusta.

F. W. Barrett has recently secured contracts for installing modern plumbing in several suburban residences.

Theo. G. McAuliffe has secured the contract for the installation of plumbing and heating systems in 70 buildings at the Base Hospital, Camp Hancock.

The Augusta Plumbing & Heating Co., 205 Washington Street, will install modern plumbing in the new comfort station at Camp Hancock.

Albert S. Hutt, of the Henry Hutt Co., has recently joined the colors and is now at Camp Wheeler.

E. J. Erbelding, of 555 Broad Street, has recently secured contracts for installing plumbing and heating systems in several country residences and garages.

Thos. G. Brittingham has just finished the installation of plumbing and heating systems in five residences in this city.

Savannah.

Thos. J. McEllum, Sr., has just been appointed plumbing inspector in this city.

The Acme Plumbing Co., of 122 Jones Street, East, has secured the contract for the installation of water meters throughout the city. This company will also remodel the plumbing in the "Brick House," a hotel in this city.

The Long Plumbing Co. has secured the contracts for the installation of modern plumbing in the Lee Morrison Building and in the Werner residence.

J. Henry Kramer, of 213 West Thirty-fourth Street, has recently secured contracts for remodeling the plumbing in several residences.

J. C. Humphrey & Co., of 114-116 Jefferson Street, will install plumbing and heating systems in the new Baptist Temple and in the Savannah Branch of the American Can Co.

John T. Collins has secured the contract for the installation of modern plumbing in the Geo. F. Armstrong new residence. The contract amounts to $35,000.

Maryland

H. L. Fairall, of Laurel, has done a large amount of plumbing and heating work for the government during the last five months at the Beltsville U. S. Experimental Farm and Wool Laboratory, and he is now constructing a reserve fire protection system at Beltsville, with a half-million-gallon reservoir, which is to be supplied from artesian wells. When completed, this system will have an 8-inch supply line with a fire-fighting pressure of about 80 pounds per square inch.

Florida

Jacksonville.

Green & Firth, of 1711 Main Street, have recently secured several contracts for remodeling plumbing and heating systems in residences in this city and vicinity.

Robert Engstrom, formerly connected with the plumbing business of Lasette & Murphy in New York City, is building up a good plumbing business in this city.

R. S. Slauter has secured the contract for the installation of plumbing in the Church of the Good Shepherd and in the St. Albans Hotel. The former contract amounts to $2,850 and the latter to $4,700.

John P. Mathis has the contracts for remodeling the plumbing in several suburban residences.

James N. Coons has recently secured contracts for installing modern plumbing in five new public school buildings. Mr. Coons recently moved his business from 17 Ocean Street to 907-909 East Bay Street.

P. R. Mathis, of 1830 East Union Street, is remodeling the plumbing in several yachts and steamers in the harbor.

L. M. Roberts is remodeling the plumbing in several residences in this city and vicinity. His son, Elbert, is doing his bit for his country by conducting a large squab and pigeon business.

Hooker & Lighbody Co. is remodeling the heating systems in several residences in this city.

John A. Walker, of 1422 Liberty Street, has recently secured contracts for installing plumbing in two residences. Mr. Walker has served as secretary of the Jacksonville Master Plumbers' Association since 1893.

J. H. Harvey has secured the contracts for installing plumbing in two residences and for remodeling the plumbing in a hotel in La Villa.

Oklahoma

Ardmore and Vicinity.

Hoffman & Co. have secured the following contracts: Plumbing and heating in a $25,000 building on Main Street, and in Roy Johnson's $23,000 building, as well as in the new Cooper garage in this city.

The Ardmore Plumbing Co. reports having several plumbing and heating contracts on its books.

George Erickson will install plumbing and lighting systems in ten new residences this spring.

O. V. Stephens, of Sulphur, is installing plumbing and heating systems in the new $75,000 hospital for the deaf and dumb.

Chickasha and Vicinity.

A. F. Bock, one of the leading plumbers in this city, is confined to his home by illness. He expects, however, to be able to be on deck again within a couple of weeks.

Roy English has secured the contracts for installing plumbing and heating systems in eight new residences.

The Oklahoma State College for Women is planning to build a $150,000 dormitory. Architects Layton & Smith, of Oklahoma City, are preparing plans and specifications.

H. S. Jarboe has secured contracts for installing modern plumbing in George T. Putty's and C. L. Briscoe's new residences.

Jay Fellows, of Henrietta, will install plumbing and heating systems in the new $150,000 hotel in Duncan.

Cleveland Flush Valves
Simple Sanitary Satisfactory
Designed for general use, and especially where hard usage is unavoidable. Lever or push button action.
Write for our Special Sample Valve Offer.
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LEADER BRASS FOUNDRY & MFG. CO.
3300 Jennings Road, Cleveland, O.
Sole manufacturers of
LEADER Self-Closing, Compression and Rapid-Action Basin Cocks, Bibbs and Stops.
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UNCLE SAM has tested our
STANDARD PORTABLE VISE BENCH AND PIPE BENDER
and same has proved satisfactory. HE is now one of the THOUSANDS of satisfied users we have. Drop us a line and we will send you full particulars, or ask your jobber for same.
STANDARD IRON WORKS
508-10 E. 74th Street, New York City

F. & W. Electric House Pumps
are of large capacity, economical, silent in operation, and easily installed. *Send today for bulletin.*
FLINT & WALLING MFG. CO. KENDALLVILLE, INDIANA

VAPOR MOUAT HEAT
A system that works on less than 3 ounces of pressure, that has no water in the pipes, no air vents, necessarily combines features that appeal to everyone.
Get the Facts
THE MOUAT SQUIRES CO.
1246 W. 4th St., Cleveland, O.

PORTABLE SHOWERS
SPECIAL PRICES IN DOZEN LOTS
SHOWERS OF ALL DESCRIPTIONS
GOETZ BRASS COMPANY
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Phillips High Speed Drills
For drilling all size holes, ¼ to 1⅛" in concrete, brick and stone, in walls, floors and ceilings for expansion bolts, pipe hangers, etc. Write for folder. Manufactured by
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Look For
NATIONAL
The Name
THE LAW OF GROWTH
¶ In the world of industry the law of GROWTH is governed by the increase in demand for a product. ¶ The demand for "NATIONAL" Pipe and allied tubular products is an impressive evidence of the law of GROWTH, which will be the illustrated subject of an announcement—GROWTH—next week.
NATIONAL TUBE COMPANY, Pittsburgh, Pa.

An Air Valve With a Reputation

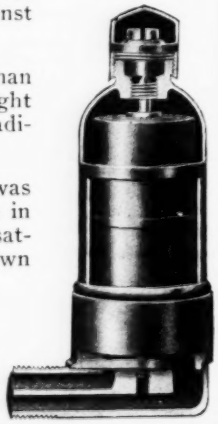
Russell's Perfect Automatic Air Valve

has a sealed metal float in the shell of the valve, which is flexible top and bottom and partially filled under vacuum with a sensitive fluid.

When cold the valve is open, freely venting the radiator of accumulated air. When steam reaches the valve, the vaporizing of the fluid expands the expansion float and closes the valve against loss of steam.

The float is lighter than water and will close tight should water enter the radiator.

Ever since this valve was put on the market by us in 1890, it has given entire satisfaction under every known heating condition.

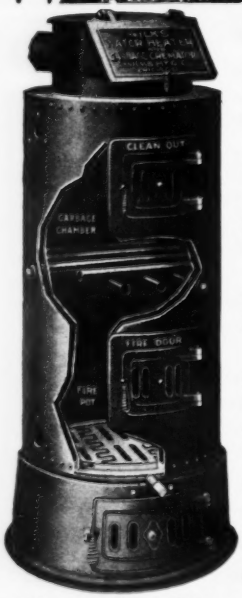


Write for Circular.

W. A. RUSSELL & CO.

63 West 37th Street New York N.Y.

WILKS Water Heater and Garbage Burner



helps you to make a friend of every customer, which means repeat orders.

Made of heavy steel boiler plate, carefully riveted and braced. Tested to 100 lbs. hydrostatic pressure.

Constructed so that garbage grate forms part of heating surface.

Constant circulation of water and staggered arrangement of tubes increase efficiency materially.

Deep fire-pot. Large, convenient doors.

Write for Catalog and Discounts to the trade

S. Wilks Manufacturing Co.

3517 Shields Avenue Chicago

California

San Francisco and Vicinity.

The cost of steam used in heating apartment houses and in the down-town districts, to some extent, for industrial purposes, is going up. At a recent meeting of the Real Estate Board an effort was made to have the Railroad Commission fix rates. That body has just declined on the ground that steam is not a public utility within the meaning of the existing utility laws. It appears that many leases have been negotiated, with the understanding that the price of steam heat would be a certain amount, and that in most cases after the deal had been closed, an increase in the rates for steam had been effected, causing great dissatisfaction on the part of the tenants, and also that many leases had been held up because of the unstable condition involved in making contracts for steam.

Edwin J. Symmes, 721 Pacific Building, is asking for bids on the plumbing and electric lighting of the Yosemite Grammar School, which is soon to be erected in Yosemite Valley, Cal.

The Fire Protection & Equipment Co., 25 Minna Street, San Francisco, was one of the bidders for the installation of an automatic sprinkler system in the General Storehouse at the United States Navy Yard, at Seattle, Wash., the company's figure being $25,275. The only other bidder for the work was the Automatic Sprinkler Company of America, Washington, D. C., whose bid was $21,715.

The Public Health Service, Washington, D. C., at a cost of $250,000, will erect six emergency hospital buildings adjoining the Marine Hospital at the Presidio, San Francisco. The improvement will virtually be an extension of the latter institution. Most of the buildings will be one story in height and 200 feet long.

Separate bids are now being taken on all parts of the work on the five-story, $200,000, class A addition to the Mills Building.

The Pacific Improvement Co., Crocker Building, has completed plans for and will soon start work on a $90,000 hotel, which is to be erected at Pebble Beach, Monterey County.

Alterations on a residence at 1816 Broadway to cost $7,500, will include new plumbing and heating systems.

Samuel H. Levin is planning to erect a one-story and balcony Class A theater building on the corner of Clement and Ninth Avenue, at an estimated cost of $72,000.

Contracts will soon be awarded for the plumbing and heating equipment of the following apartment houses: The $25,975 three-story and basement Dunn building on South Washington Street; the $50,000 Palo Alto apartments, being built by W. D. Wasson; the three-story and basement Show building, on the corner of Clay and Franklin Streets, at an estimated cost of $15,000, and the thirty-six room Finkle apartments, to be erected on the corner of Pine and Stockton Streets, at a cost of $35,000.

Other Cities in the State.

According to the weekly report of the Walter H. Leimert Co., there has been a sudden and remarkable increase in residental building in Oakland. "Not since 1913," reads the report, "has there been such a number of houses started in a two-week period as between March 21st and April 5th, just past. In March, 1917, only forty-nine bungalows were started in this city; in April, 1917, only forty-seven. The number started in the last two weeks has been fifty-seven, which if continued for the

month would mean an increase over last year of 125 per cent. Much of this residential activity is in the lake district.

Sealed bids are being taken for the construction of a three-story apartment house at Stockton. The building is to contain twenty-four apartments and will cost about $70,000.

In order to rush the work on the Mills Station, at the aviation field, now under construction, near Sacramento, a request has been made that plumbers work eight hours a day, six days a week, omitting the usual Saturday half holiday.

John Healy, of Oakland, has been awarded the contract for the construction of a sewer system in Kings City, on his bid of $13,450.

Minnesota

St. Paul and Vicinity.

Martin Tschida will install modern plumbing in the Schultz new residence at the corner of Blair Street and Lexington Avenue.

John Katzenmaier has secured the contract for the installation of plumbing in A. F. Tobarch's new residence at East Sixth and English Streets.

T. J. Clark has been awarded the contract for installing modern plumbing in J. C. Young's residence on Standish Street.

Carl P. Dahlby will install the plumbing in A. Borg's new residence at 798 Curfew Street.

R. N. Brooks will install modern plumbing in the Y. M. C. A. building at the Aviation Mechanics' Training School at University and Eustis Streets.

John McQuillan will install the plumbing in H. M. Lebb's residence.

J. W. Martin has secured the contract for the installation of plumbing in the new Hamm Building on East Fourth Street.

Massachusetts

Boston and Vicinity.

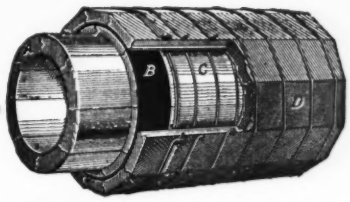
Joseph A. Maynard, formerly connected with the plumbing supply trade, has been reappointed surveyor of the port of Boston, a position he has held for several years, relinquishing a position with one of the large supply houses to accept it.

Elmer S. Stack, president of the Stack Heater Co., of Boston, has recently delivered lectures on "Facts Not Generally Known About Pressure and Temperature Conditions in Range Boilers," before the Master Plumbers' Associations in Lynn, Malden and Salem, and before the Range Boiler Exchange in New York, and the Gas Sales Association in Boston.

Other Cities in the State.

The Somerville board of aldermen has named a special committee to make a complete revision of the plumbing laws of the city.

The firm of Pickett & Goodwin, plumbers and steamfitters, of Beverly, has been dissolved, Arthur C. Goodwin retiring. A new company has been organized under the name of the Pickett-Elliott Co., consisting of Charles G. Pickett, James Elliott and Albert F. Teague. Mr. Elliott has been connected with the old firm for 20 years and Mr. Teague for 16 years.



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B—Asphaltum Packing.
C—Dead Air Space.
D—Outer Shell, 1 inch thick.

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WITH WYCKOFF'S IMPROVED

CYPRESS COVERING

Made of Gulf Cypress, the wood eternal

Not affected by wet and dry conditions common to steampipe trenches. Will not rot. Lasts twice as long as Pine Casing. Absolutely water and steam tight. Each shell is wound with heavy galvanized wire. Coated all over with the best known preservative—Hydrolene B.

Let us answer your questions and tell you all about it. Booklet on request.

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Elmira, N. Y.

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Brass and Malleable Iron Goods
FOR
Steam, Water, Air and Gas

A full line of valves—
Angle Check
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Radiator
Tested. Guaranteed.

Malleable Fittings
to meet every requirement. Will not leak air. Uniform. Guaranteed for 150 lbs. steam working pressure. ***Write for Catalog***

Detroit Valve & Fittings *and* Detroit Brass Works
DETROIT, MICHIGAN

Heaviest — Strongest

Hanna "Ball Joint" Pipe Hanger

Pipe can be raised or lowered without removing hanger—a decided advantage over the ordinary hanger.

Can swing in any direction.

Neat, convenient, practical and durable. Guaranteed.

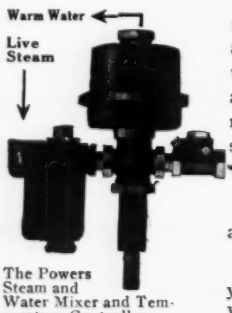
Write for "Our Silent Salesman."

The Penn Engineering Co.

Philadelphia, Pa.

Simple *and* Safe

You can install this thermostatic steam and water mixer in Factories, Mines and Industrial Plants of all kinds in your locality, because it supplies a long-felt need for hot water equipment at low cost.



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Adapted to wash sinks, shower baths, etc. Affords a simple way of supplying water at the right temperature. Absolutely safe — made so by the thermostatic feature.

It's a money-saver and a money-maker.

Bulletin 137 will give you complete information. Write for it.

Our experience of over thirty years is at your service to aid in solving any problems of temperature control.

The Powers Regulator Company

Specialists in Automatic Heat Control

952 Architects Bldg. NEW YORK — 2141 Mallers Bldg. CHICAGO — 363 The Federal St. Bldg. BOSTON

Canadian Powers Regulator Co., Ltd., Toronto, Ont.

The Selian Heating Co. has moved its establishment from 141 Main Street, Everett, to 67 Merrimac Street, Boston.

George Starbuck & Sons, of Turners Falls, are having their store refitted and remodeled for the better display of their stock of plumbing fixtures.

W. R. Parks, Jr., of the plumbing firm of W. R. Parks & Son in Taunton, is chairman of the Third Liberty Loan drive in his city. He is also contemplating joining the Red Cross Service.

Robert MacAdam, of Taunton, has just built a structure for his plumbing establishment on Highland Street in that city.

I. F. Whitmarsh Co., of Taunton, will install plumbing and heating systems in a large garage and in several new residences in that city.

The opening of a large tract of land at South Hadley Falls for house lots has caused a strong agitation for more stringent building and plumbing regulations in that town. South Hadley is said to be the only town of its size in Massachusetts, which does not have building and plumbing rules applicable to dwelling houses.

RELATION OF HOT WATER SERVICE HEATING TO VARIOUS TYPES OF BUILDINGS.

(Continued from Page 125.)

gas heaters are figured and rated on a temperature rise of only about one-half of the rise used as a basis in figuring steam heaters; therefore the rating of the gas heater should be doubled to obtain an equal transfer of B. t. u. to the water. Thus a steam heater with a capacity of heating 1,000 gal. of water per hour (with a rise from 100 to 130 deg. Fahr.) should be compared to a gas heater rated at 2,000 gal. per hour (with a temperature rise of 60 or 70 deg. Fahr only.)

When it is desired to install a coal-burning hot water heater, it is difficult to obtain a good combination of heater and tank without increasing the tank capacity so as to carry all heavy loads for two or three hour periods and putting in a heater just large enough to heat up the water during the hours when the requirements are small.

Under all ordinary conditions, 25 per cent of the maximum hourly demand is enough to use for determining the heater, while the storage tank is made large enough to store all the water necessary to carry over between periods.

Assume a building occupied, say, 7 hours a day—such as a school or university. The maximum consumption figures out as 500 gal. per hour; average use will be about 500× 33⅓ per cent=167 gal. per hour; coal heater rated at 25 per cent of 500=125 gal. per hour. Then every hour during the seven hour period results in 167 gal. being drawn off and 125 gal. heated or a loss of 42 gal. per hour. For 7 hours the loss will be 42×7=294 gal. and with 25 per cent still in the tank, the tank capacity would be 294+25 per cent of 294, or 294+74, or 368 gal.—say 400 gal. storage.

The coal heater may be figured as burning anywhere from 5 to 8 lb. of coal per sq. ft. according to size. If 7 lb. is assumed in this case and 8,000 B. t. u. is transferred to the water from every pound consumed, then each square foot of grate surface will supply 8,000×7=56,000 B. t. u.

Raising 125 gal. of water from 50 to 150 deg. requires 125×8⅓×100=104,200 B. t. u.

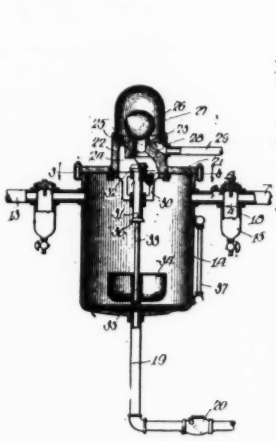
Therefore 104,200÷56,000=2 sq. ft. of grate area.

Where high water pressures are encountered the ordinary hot water heating boiler will not stand the pressure, and a steam boiler and steam hot water multi-tube should be used.

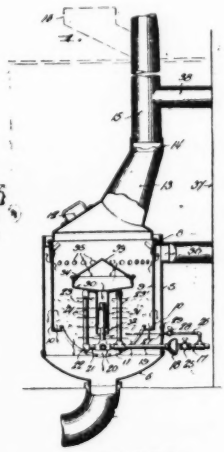
Patents

Heating Department.

1,257,354. Vacuum Vapor-Heating System. Henry J. Hunt, Chicago, Ill., assignor to Sol I. Shane, Chicago, Ill. A steam trap for heating systems including a sealed vessel having a discharge port for air and vapor, a valve-seat bordering said port, a check-valve co-operating with said seat to normally maintain said port closed against the admission of air or vapor, a second seat surrounding said valve-seat, an inverted transparent cup removably mounted on said second seat, there being an open space between said seats adapted to be connected with means for maintaining a partial vacuum in said cup, a second valve seat at said discharge port, a normally open valve adapted to seat thereon, a float operatively associated with said valve for automatically closing the same as water accumulates in said vessel to a predetermined level, an inlet port for air, water and vapor to said vessel below the discharge port, and an outlet for water in the lower end thereof.



1,257,354



1,257,359

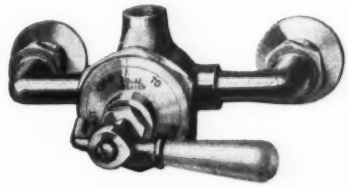
1,257,359. Garbage Incinerator. Nels C. Johnson, Racine, Wis. A garbage disposal apparatus comprising an outer casing, a drain for the outer casing, a receptacle disposed in the outer casing, a feed chute communicating with the receptacle, a burner supply pipe extending into the casing, upstanding burner members connected with said pipe, and a covered drain member resting on the upstanding burner members, the latter forming a support therefor, the cover of said drain member being adapted to initially separate the liquid and solid portions of the garbage as the latter strikes the same, the other portion of the drain member directing said liquid toward the bottom of the receptacle.

1,258,642. Combined Electric Heater and Boiler. Napoleon Bergeron, Montreal, Quebec, Canada, assignor of twenty-eight one-hundredths to Joseph U. Gervais, twenty one-hundredths to Donat Valiquette, and sixteen one-hundredths to Avila A. Lortie, Montreal, Quebec, Canada. A combined electric heater and boiler comprising a casing, a plurality of tubes arranged within said casing having their opposite ends open, heating coils arranged within said tubes, a heat retaining compartment com-

ROYAL

Mixing Valve for Showers

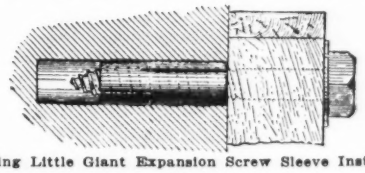
Simple in Operation—Few Working Parts.



Write for Catalogue.

THE ROYAL BRASS MFG. CO. CLEVELAND, OHIO

UNIFORM EXPANSION



Showing Little Giant Expansion Screw Sleeve Installed.

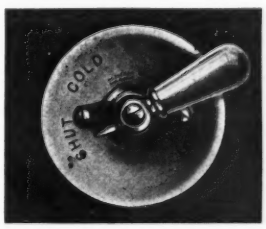
The Little Giant Expansion Screw Sleeve does away with the ordinary wedge nut or pipe sleeve, and is more convenient to use. Try it.

Write for details and prices.

Stannard Mfg. Co., Springfield, Mass.

NIEDECKEN MIXER

For
Shower
Lavatory
Bath
Sink
Etc.



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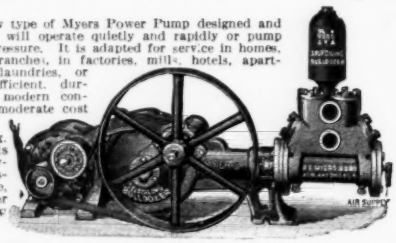
MYERS SELF-OILING
Bulldozer Power Pumps

Here is a new type of Myers Power Pump designed and built so that it will operate quietly and rapidly or pump against heavy pressure. It is adapted for service in homes, on farms and ranches, in factories, mills, hotels, apartment houses, laundries, or wherever an efficient, durable pump of modern construction at a moderate cost is desired.

Self-Oiling. Working Parts Enclosed. Several sizes. Gasoline engine, motor or other power. Catalog on request.



F. E. Myers & Bro., Ashland, Ohio

The Modern Way

Saves time and money and makes it easier to connect up fittings to soil pipe already installed.

The Sisson Insertable Joint

does away with springing of stack and removing whole lengths of pipe. Cheaper and makes a most satisfactory job.

Drop us a postal for prices and details.

R. Estabrook's Sons
1st and C Sts., So. Boston, Mass.

Don't Tear Out Soil Pipe

Repair Soil Pipe with

Wolverine Soil Pipe Mender

Simply insert toggle thru hole and screw home

WOLVERINE BRASS WORKS
GRAND RAPIDS, MICH.

Use Only the
ORIGINAL
Double Drainage Drains

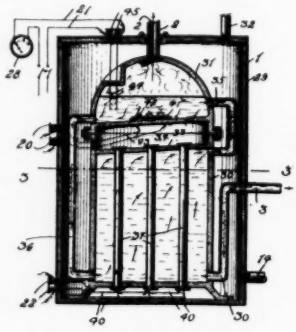
The Standard of America

Look for "JOSAM" on Every Drain

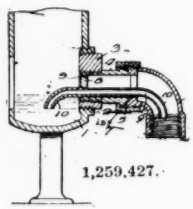
Made by
JOSAM MFG. CO
29 S. Fourth St. St. Louis, Mo.
EASTERN BRANCH: 7 W. 45th St., NEW YORK
Southern Branch:
615 Empire Bldg., Atlanta, Ga.
Pacific Coast Branch:
1002-4 Merchants Nat. Bank Bldg., San Francisco, Cal.

municating with the upper ends of said tubes, and means whereby water may circulate within said casing around said tubes and above said compartment substantially as and for the purpose specified.

1,259,427. Radiator Fitting. Frank Meyers, Dubuque, Ia. In combination with a radiator and the return pipe therefor, a short conduit turned into engagement with the radiator outlet opening and having one end partially closed, the remaining end of the short conduit being connected to the return pipe, and a tube having its opposite ends curved passing through said short conduit into engagement with the radiator and the return pipe.



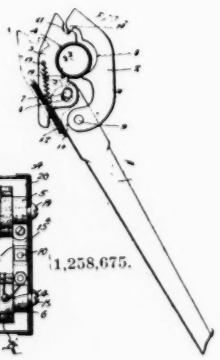
1,258,642.



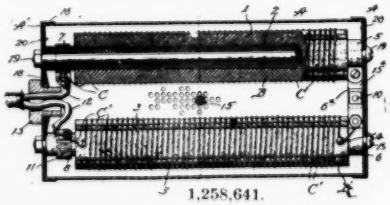
1,259,427.

1,258,904. Electrical Heating Device. George A Hughes, Chicago, Ill., assignor to Hughes Electric Heating Company, Chicago, Ill., a corporation of Illinois. In a heating device of the class described, the combination of a core, terminals clamped to said core adjacent the ends thereof, a heating conductor wound spirally on said core and having its ends connected to said terminals, cross supporting members secured to the ends of said core, a shell removably slipped over but not secured to the ends of said cross supporting members to protect and to be spaced away from the core and conductor thereon, detachable end caps telescopically fitting the shell ends, one of said caps having an opening, and an electrical supply conductor extending through said opening and connecting with said terminal

1,258,904



1,258,675.



1,258,641.

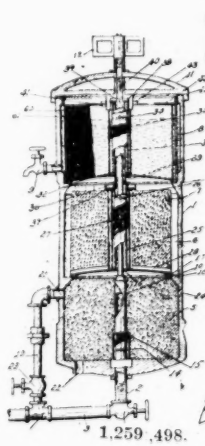
1,258,641. Electric Heater. John Berg and Lloyd W. Golder, Chicago, Ill., assignors to Metal Specialties Manufacturing Company, Chicago, Ill., a corporation of Illinois. In an electric heater of the character set forth, a core of insulating material having a comparatively hard surface, a relatively soft insulating strip on said core, and a naked wire winding on said core having its convolutions indenting said soft insulating strip which this serves as a spacer for said convolutions.

1,258,675. Casing Tongs. Edwin A. Hardison, Los An-

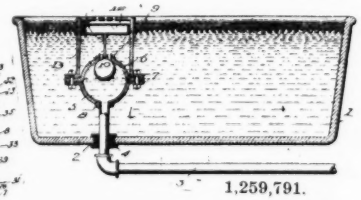
geles, Cal. Casing tongs comprising jaws having integral releasably interengaging ends, and a handle loosely pivoted to one of the jaws and pivoted to the other jaw at a point along the handle spaced from the first pivot, the opposed faces of the interengaging ends, when the jaws are closed, being oblique with reference to the longitudinal axis of the jaws in the general direction of relative movement of the pivots.

Plumbing Department.

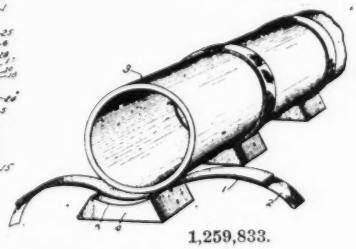
1,259,498. Filter. George Elmore, Akron, Ohio. A filter comprising a tank, a plate in the lower part of said tank forming a compartment adapted to contain granular filtering material, a second plate above the first, thereby forming a compartment, a filtering stone in said second compartment, a tube on said first named plate receiving water from the first compartment and delivering it to the center of said stone, means to draw off the water above said second plate, and a conduit for the water whereby it is collected above said second plate.



1,259,498.



1,259,791.



1,259,833.

1,259,791. Water-Level-Regulating Device. Albert Henry Simmons, Orland, Cal. In combination with a trough and a supply pipe leading thereto, of a substantially spherical valve casing at the top of the pipe and connecting with the pipe and having a port at its top, a ball valve within the casing co-operating with the port, a float, a stem connecting the float to the valve, a casing inclosing the float and secured to the valve casing and having openings in its top for equalizing the air pressure within the casing and also having discharge openings in its side below the float, said spherical casing being sectional and the sections having marginal flanges abutting, the float inclosing casing also having a marginal flange abutting the flanges of the sections.

1,259,833. Pipe-Joint. Clinton S. Burns, Kansas City, Mo. The combination with abutting pipe sections of a joint sealer inclosing the abutting ends of said section comprising a sealing strip of plastic, adhesive and water proof material mounted on a fabric backing strip, the ends of the backing strip being extended beyond the ends of the sealing material, for the purpose set forth.

Mitchell, Neb.—The Mitchell Plumbing & Heating Co. has secured the contract for the installation of plumbing and heating systems in the new Sunflower School House. The contract amounts to $8,000.

Ottawa, Kans.—The Elder Mercantile Co. has secured the contract for the installation of plumbing and heating systems in the new North American Hotel in Omaha, Neb. The contract amounts to $30,000.

ECONOMY EFFICIENCY

This is a
Pierce Down Draft, Magazine Feed, Smoke Consuming, Heating Boiler
Saves Fuel Labor
Manufactured only by
PIERCE, BUTLER & PIERCE MANUFACTURING CORP.
Brooklyn Boston Worcester — NEW YORK — Syracuse — Philadelphia Baltimore Washington

Eagle All Lead Roof Flange

LEAD PIPE
Length, 6 inches
Diameter, 4½ inches
Made in Angles, 45 deg., 22½ deg. and Straight.

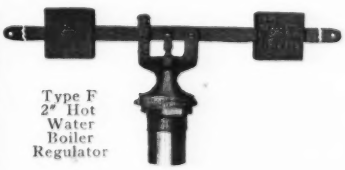
SIZE OF APRON
15 inches Square

No Caulking To Be Done
Joints Lead-burned — No Solder Used
Flexible Adjustable Economical
Write for Circular and Prices.
Manufactured only by
The Eagle-Picher Lead Co.
CINCINNATI, OHIO

Damper — Regulators — Tank

High Pressure
Low Pressure
Hot Water
Vapor

Hot Water
Cold Water
Vats-Kilns
Pots-Dryers

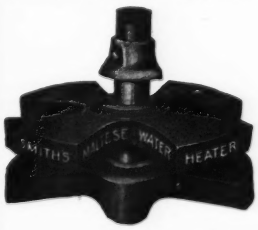


Type F 2" Hot Water Boiler Regulator

The Famous Kingsbury Electro-Flush Valve

National Regulator Company
208-12 S. Jefferson St., Chicago
METAPHRAM

Smith's Jointless Hot Water Attachments



are the ONLY ones that give water circular motion and that have no obstruction to the natural movement of the water.

Smith's Maltese Heaters
are made in 8 sizes—can be used in any furnace.
Easy to install. Highly efficient. Thoroughly tested.
Write for Catalog.

Hero Furnace Co.
Lake and Dearborn Streets Chicago

Classified Advertisements

The charge for advertisements under this heading is $1.00 for 25 words or less, including heading and address; 4 cents each for additional words. To insure insertion, copy and remittance should reach us by Wednesday morning.

Situations Wanted.

POSITION WANTED—WHAT COMpany wants the services of a thorough, up-to-date man, experienced in calling on architects and plumbing trade? Can write detail specifications; have full practical knowledge of plumbing fixtures and materials; know the game from A to Z. Best references. Address 2526, care "Domestic Engineering," Chicago. 4-20-27

Miscellaneous.

WANTED—ONE 12-INCH BIGNALL & Keeler Pipe Machine. Address 2495, care "Domestic Engineering," Chicago. 2-9tf.

WE BUY IRON PIPE COUPLINGS—spot cash. How many, either pounds or pieces have you of various sizes? Gwilliam Supply Co., 615 Christian Street, Philadelphia, Pa. 10-6,tf

SELL YOUR SURPLUS COUPLINGS and fittings. Write us. The A. & J. Mfg. Co., 557 W. Lake St., Chicago. tf

SALESMAN, EXPERIENCED, CALLING on trade Southwestern states, desires line good brass goods, direct manufacturer to plumber, to sell on commission. Address 2527, care "Domestic Engineering," Chicago. 4-27; 5-4; 11

WHY PAY MORE, WHEN YOU CAN buy at one-third less than your local printer can make, our Plumbers' Job Tickets, Time Sheets, Estimate Blanks, Contract Cost Sheets, Proposal Blanks, Fitting Bin Labels. Send for samples and prices. Wesley A. Fink, Haddon Heights, N. J. 4-20-27

Books for Your Trade Library.

Sanitation in the Modern Home..... 2.00

Sanitary Sewerage of Buildings..... 1.50

Notes on Heating and Ventilation, Prof. John R. Allen..... 2.50

Practical Steam and Hot Water Heating and Ventilating, A. G. King.... 3.00

A Practical Manual of Steam and Hot Water Heating, Edward R. Pierce.. 2.50

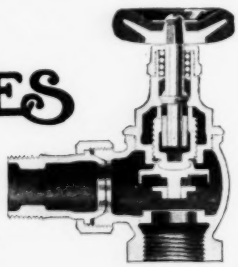
Domestic Engineering
407 S. Dearborn St., Chicago

Use This Page To Get What You Want

If you are looking for competent employes; or if you contemplate a change in position, have a patent for sale; wish to purchase or sell a plumbing and heating business; second-hand machinery or tools; form a co-partnership, etc., your advertisement on this page will put you in touch with the people you desire to reach.

The cost of insertion is only four cents a word and may mean many dollars to you.

MARSH
RE-ENFORCED PACKLESS
VALVES



These valves are suitable for HIGH PRESSURE service, a large factor of safety for low pressure and vacuum work, and the ONLY Packless Valves RE-ENFORCED AGAINST LEAKAGE through WEAR OR INJURY TO PACKLESS FEATURE.

We furnish every style of valve required for a heating system.

Let us send you catalogue and prices.

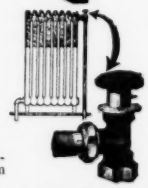
MARSH VALVE COMPANY
ERIE, PA.

Get Our Bulletin 133-E

Save on Fuel Cost

Save on Installation cost

It gives valuable information about
ADSCO HEATING
ATMOSPHERIC PRESSURE SYSTEM
Steam or Vapor with the noted
ADSCO VALVE
GRADUATED RADIATOR



For Central Station or Individual Boiler
ADSCO Heating Systems mean greater success for you without any radical change from your past practice.

AMERICAN DISTRICT STEAM COMPANY
General Offices and Works, North Tonawanda, N. Y.
New York Chicago Seattle

No Coils to Clog

Every plumber knows how much time is wasted in cleaning lime deposits from water heater coils. The easiest way to eliminate this is by using

SHARP'S Clean-Out HEATER

By removing front cover, lime can be scraped out quickly.

Note zig-zag water travel. This makes heater 100% efficient.

Write for full details.

Heater with Front Cover Removed

GENERAL MANUFACTURING CO.
67 19th Street WHEELING, W. VA.

ALLEN NON ACID SODERING FLUX
Send for our circulars and post up on stronger sodered joints.
L. B. ALLEN CO., Inc.
452f N. Lincoln St., CHICAGO

K-K Cleans Closet Bowls
"The Sanitary Way"
Shake a little into bowl, let remain a few minutes, then flush. Leaves bowl and trap free from stains and odors. K-K is scientifically prepared for this purpose only—not a general cleaner.
Keep a supply on hand—your trade wants it.
The Chamberlain Company
Manufacturing Chemists - - - - - Pittsburgh,
Use "Desolvo" for Cleaning Clogged Pipes